FEB. 19
1959

84TH ANNUAL REPORT AND FORECAST

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ENGINEERING
NEWS-RECORD

THE CHALLENGES OF GROWTH

Construction men face urgent challenges now that the economy is growing again. Two of them stand out:

BETTER COST MANAGEMENT

Profit opportunities will dwindle unless we find new ways to get more for construction dollars, especially in labor.

BROADER THINKING AND PLANNING

Transportation, water, urban renewal problems are immense. Growth is sure to languish unless we develop broader solutions.

This issue points up the problems and some encouraging moves to meet them.

see page 39

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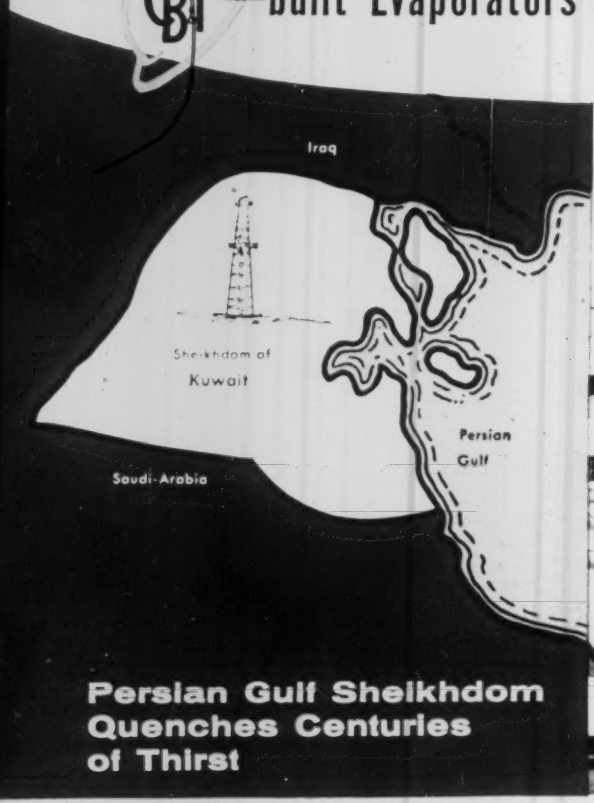
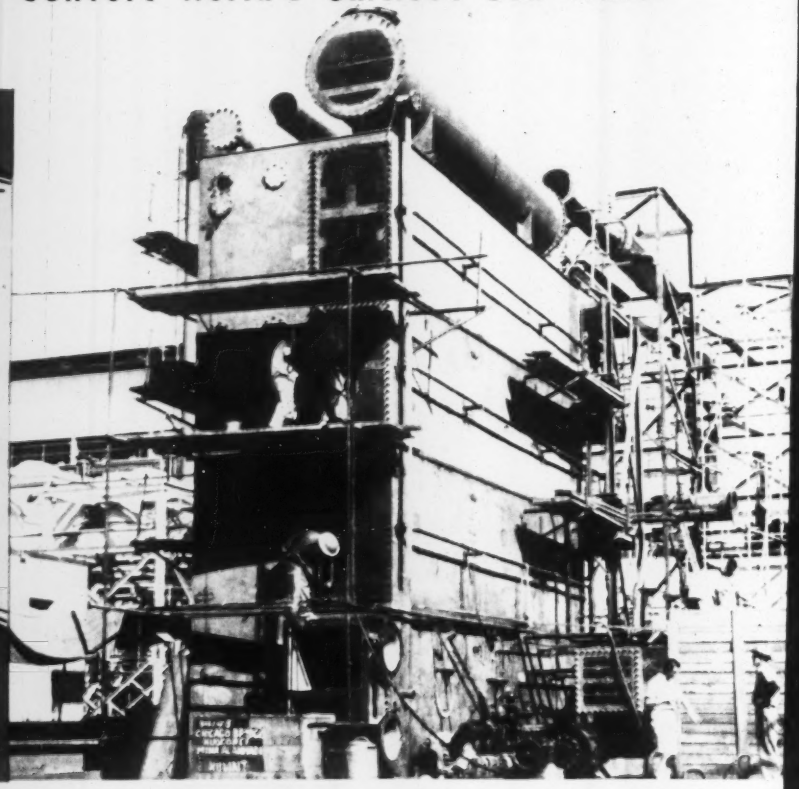
A McGRAW-HILL PUBLICATION

CB&I—built Evaporators Convert World's Saltiest Sea Water



Persian Gulf Sheikhdom Quenches Centuries of Thirst



At the tip of the Persian Gulf, between Iraq and Saudi Arabia lies the Sheikhdom of Kuwait, blessed with seven percent of the world's oil and, until recently, plagued with some of the world's most *brackish* drinking water.

Once thirsty Kuwait has now solved its age-old problem. A CB&I-built "flash" evaporation system, designed by Westinghouse, now helps to convert Persian Gulf water—the world's saltiest, with 42,000 parts of dissolved solids per million gallons—into a fresh, potable liquid containing less than 100 parts dissolved solids per million gallons.

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Write your nearest CB&I office for further details on the Kuwait Story and for the brochure: *CB&I Special Plate Structures.*

Above right

● One of two 4-stage flash evaporators built by CB&I and erected by Chicago Bridge Limited, London for Westinghouse International Corporation. "Flash" system replaces "shell and tube" unit—occupies 25 percent less space, handles double the capacity of fresh water.

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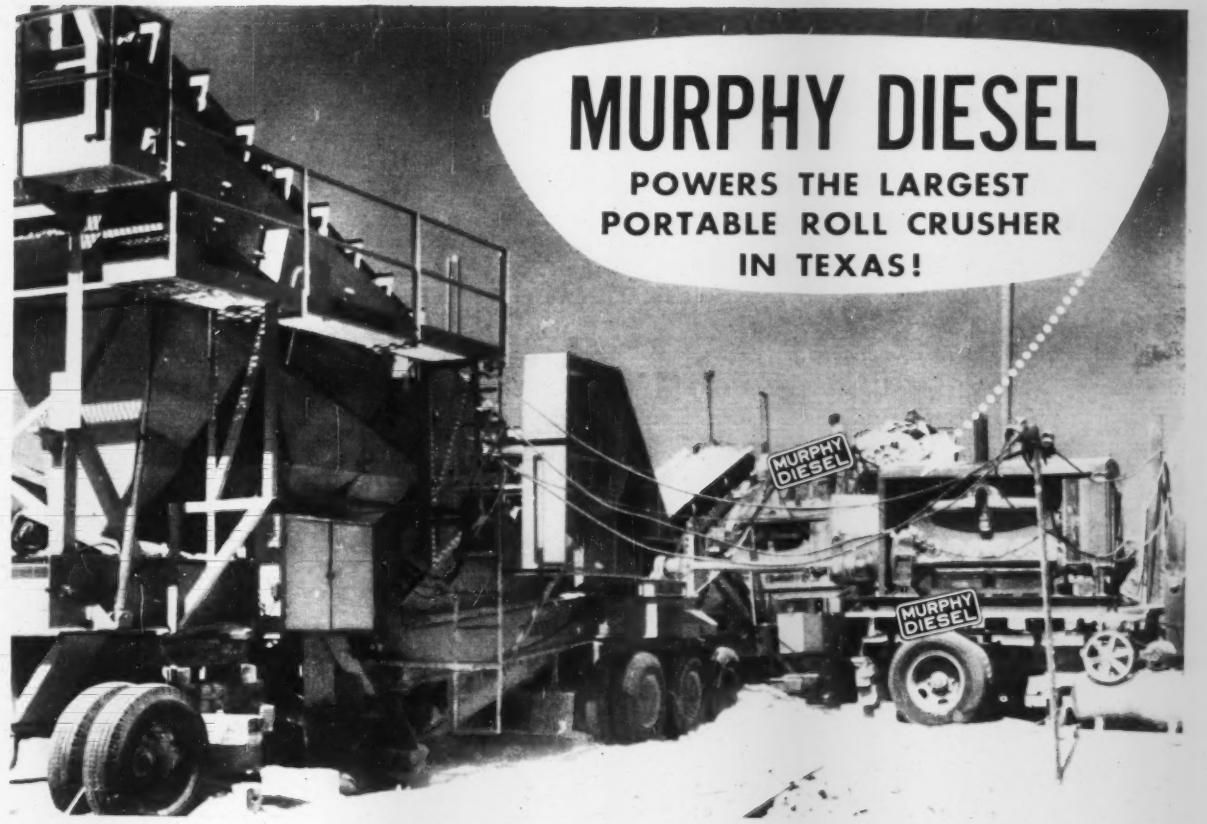

In addition to this truck-mounted Murphy Diesel shown handling the power requirements of Texas' biggest roll crusher, W. O. Pelphrey Construction Company uses a 177 HP (continuous) Murphy to power the portable primary in the background. They have a total of seven Murphy Diesels in service.

225 HP MURPHY drives a 30" x 60" Roll Crusher in W. O. Pelphrey's portable secondary plant

When it comes to heavy-duty power, you can't beat a Murphy Diesel. Ask W. O. Pelphrey of Ft. Worth about the performance of his 225 HP (continuous) Murphy, powering a secondary that's big by any standards.

Any Murphy Diesel owner will tell you the same—Murphys are built for heavy-duty service to deliver steady, more uniform power at more economical operation costs, with plenty of reserve for the heaviest demands. They start easier, run cooler, and deliver trouble-free service day after day.

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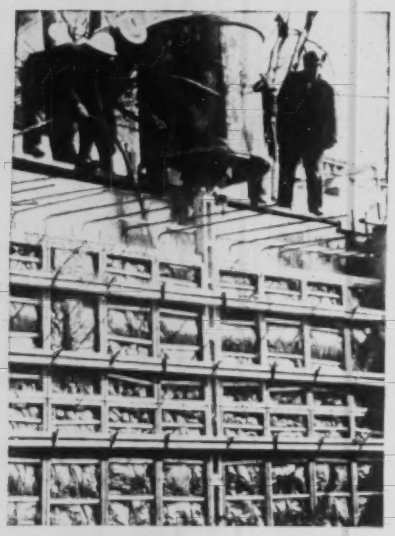
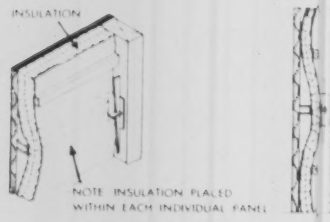


Symons Forms and Balsam Wool Insulation

Save 50% on Cost of Heating & Curing Concrete

C. R. Meyer & Sons Company, Oshkosh, Wisconsin posted this record 50% savings on the new $1,000,000 central office building of the Wisconsin Telephone Company at Oshkosh. Two-inch insulation in 24-inch widths was tacked to the forms. Walls were 12 inches thick and varied in height from 12 to 16 feet.

Pouring was started in January. Temperatures ranged from five to 25 degrees above zero. Concrete at time of pour was held in the 70 to 80-degree range. During one pour a



Cutaway section of form with insulation

tube was cast in the wall four feet from the top with a thermometer suspended in the bottom. After 24 hours, temperature at center of concrete rose to 105 degrees and after five days the concrete went back to 70.

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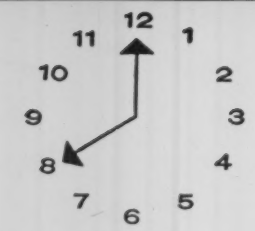

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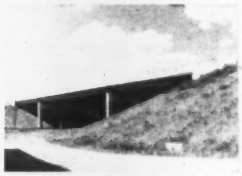

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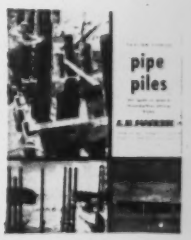

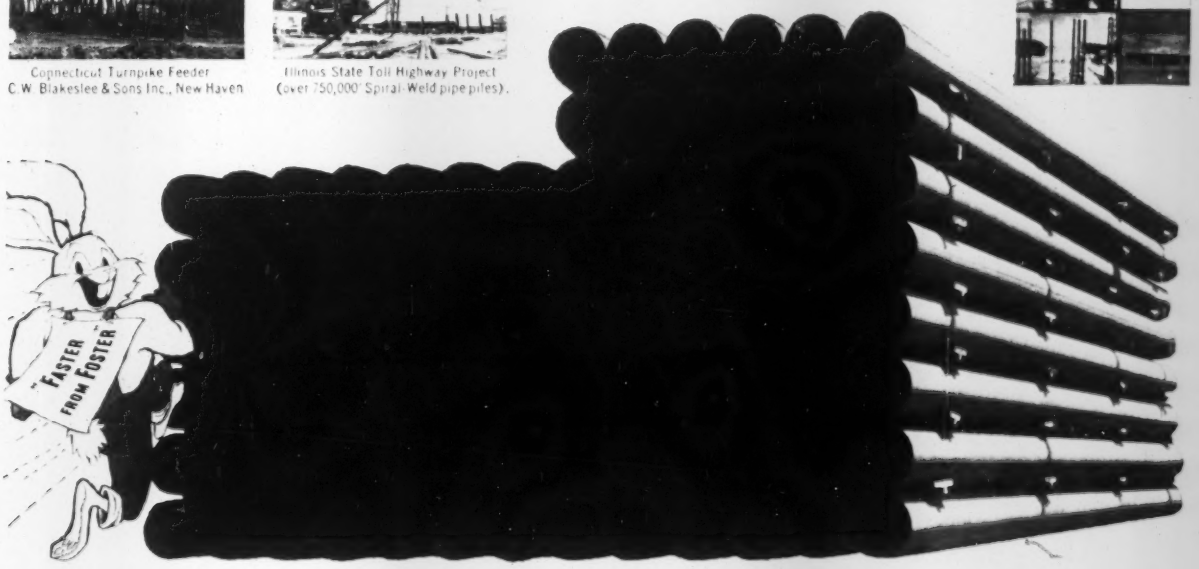

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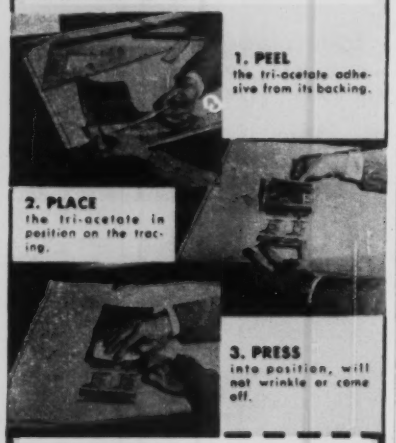

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Reader Comment

Disunity on Professional Unity

SIR—The thought-provoking letter from Keith W. Henderson and your editorial, both in the January 8 issue of ENR, are worthy of much consideration. Unity within the profession is needed—in fact, is long overdue. However, dogmatic adherence to a 14-year old principle does not seem to be in character with ENR's otherwise progressive attitude. This is particularly true when one realizes that the principle, when first stated, had the defect of neglecting to cope adequately with the individual engineer's requirements.

At the recent ASME Annual Meeting two events of importance occurred regarding this subject, as reported in the January issue of Mechanical Engineering.

A recent discussion sponsored by the Council, Boards and Committees of ASME concerned "unity" and heard Past President W. F. Ryan say that 25 years ago he had a "perfect" plan but had modified his idea since then. He noted that the AIEE Functional Plan "used what we've got." The other event was immediate Past President J. N. Landis' remarks at the President's Luncheon, ". . . I think that nationally we will soon develop a unity organization which will have a grouping of joint educational activities like ECPD, a grouping of joint technical activities like EJC, and a grouping of joint professional activities such as are embraced by the NSPE." He, too, has modified his position.

ENR, it seems to me, can effectively and progessively aid the profession should it encourage utilization of the AIEE Functional Plan and the organizations embraced therein. The modifications of organizations and procedures will come about readily when thinking men decide to cooperate fully and unselfishly.

Your cogent statements regarding EJC's weaknesses and its often inaudible voice are true. In part they define why EJC—or any federation of societies—inherently is incapable of unifying and speaking the voice of all individual engineers.

The AIEE Functional Plan with its balanced and coordinated efforts in the educational, technical and professional fields can succeed and will do so whenever the aforementioned cooperation is attained.

A. C. KIRKWOOD
A. C. Kirkwood & Associates
Kansas City, Mo.

SIR—As a member of the National Society of Professional Engineers and a charter member of the Maryland Section, I am in thorough agreement with the opinion expressed in your editorial, for I have felt this organization should join EJC and not let some early ill feeling influence the NSPE, as presently set up, to keep it from joining the EJC, which would certainly be beneficial to the engineering profession.

The idea that because members of this group make it the only registered engineering group to represent engineers is beside the point, for there are thousands of registered engineers who are not members and are represented by other groups presently in EJC. I, for one, would like to see the NSPE joining the EJC.

V. RENSSELAER P. SANE
Baltimore, Md.

SIR—Your strongly worded editorial (ENR Nov. 6, 1958, p. 152) on engineer unity (see also ENR Jan. 8, p. 124) seems to suffer from the same biased attitude displayed by many of the hierarchy of the Founder Societies which make up Engineers Joint Council, namely, the attitude that their own opinions represent the opinions of the majority of the membership.

I challenge the Founder Societies to poll their membership.

H. P. SCHULTZ
San Mateo, Calif.

SIR—I read, with great interest, the letter of Keith Henderson, "The Case Against EJC," commenting on your editorial urging that the NSPE get together with EJC. I agree with Mr. Henderson, and as a country boy, I would like to add a few more reasons.

The arguments in favor of EJC have all been written by engineers who live or work in the big cities. Those of us who live in small cities or towns have other viewpoints on the engineering societies. NSPE fills a real need.

Personally, the most important thing

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects at current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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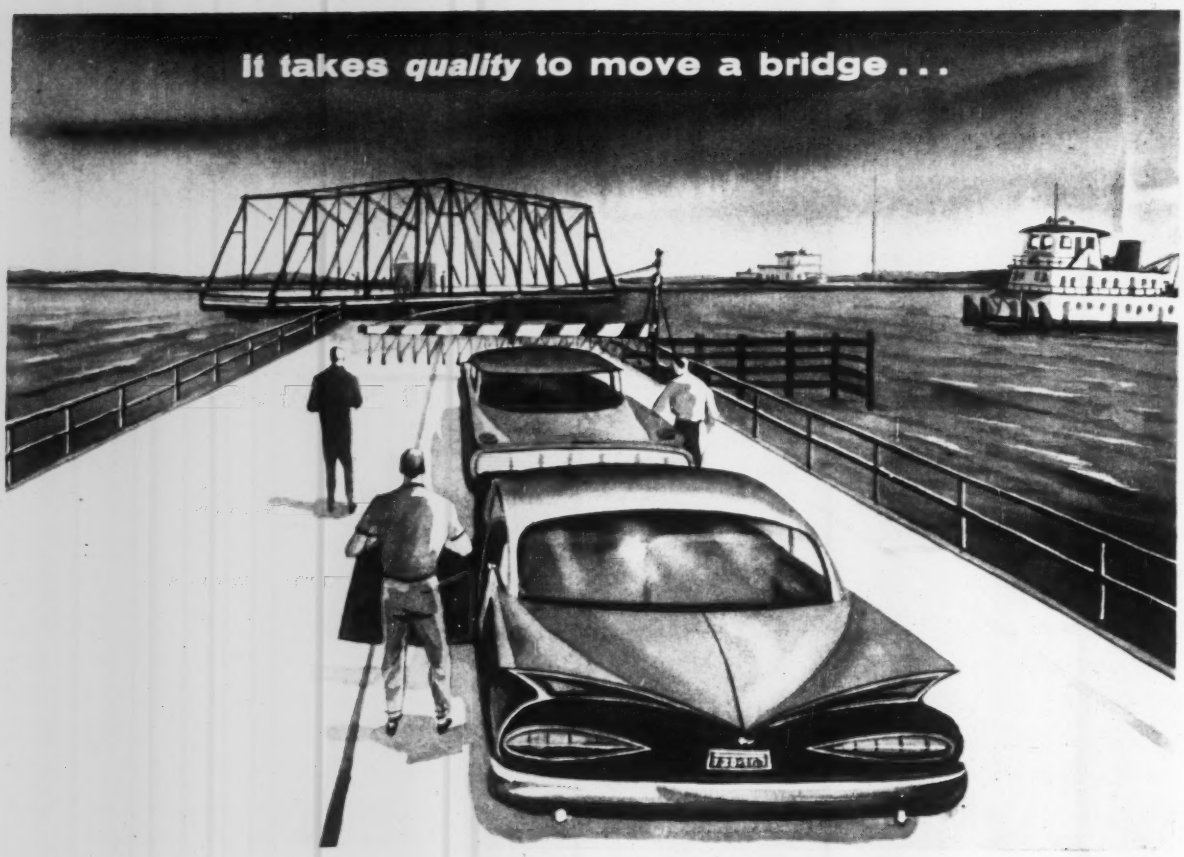

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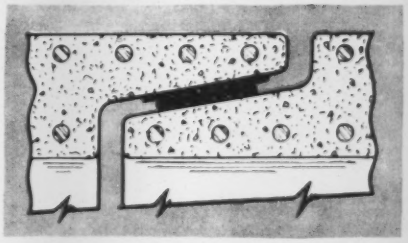
PREVENT JOINT LEAKS, WHIP CORROSION AND SPEED PIPE WORK ON SEWER PROJECT AT OIL CITY, PA.*

Oil Creek, a watercourse in Oil City, Pa., will be cleaner, purer, and an even greater enhancement to the beauty of the city, as a result of current work being done under Oil City's continuing sewer expansion program. Consisting of several miles of new laterals, new concrete pipe interceptors up to 36" in diameter, and a new sewage treatment plant, the facilities now being added make it possible to treat all sewage waste disposal before effluent is discharged into the river.

Engineers and officials specified Hamilton Kent TYLOX Rubber Gaskets for coupling the pipe lines, knowing they could count on TYLOX for three important advantages: leak-proof joints to keep infiltration loads negligible at the new plant; acid-resistance to prevent deterioration of the joints and necessity of future repairs; and easier, faster pipe coupling, to help keep construction costs down.



TYLOX Gaskets form a permanently tight **compression** seal. Water can't leak in or out . . . roots and sediment can't penetrate . . . acids can't destroy. Pipe can be coupled in wet trenches . . . backfill may be applied immediately.

5099

WRITE FOR ENGINEERING DETAILS ON TYLOX—
Specify TYLOX FOR YOUR PIPE PROJECTS

PROJECT: Sanitary sewer expansion, Oil City, Pa.

ENGINEERS: Morris Knowles, Inc., Consultants, Pittsburgh, Pa., R. B. Fleming, Resident Engineer.

CONTRACTOR: Ben Construction Co., Pittsburgh, Pa.

PIPE: Reinforced concrete, manufactured by Concrete Pipe Co. of Ohio, Cleveland, Ohio.

HAMILTON KENT
MANUFACTURING COMPANY
KENT, OHIO
427 West Grant Street **Orchard 3-9555**

CANADIAN PLANT: 10 Brussels St., New Toronto, Ont. Phone CLifford 1-2494

To keep your engines out of the shop use new

ESSOLUBE® HDX

Keeping equipment out in the field with no "down time" is the first job of your maintenance man. You can get more operating hours before overhaul if he uses *new* and *improved* Essolube HDX.

Essolube HDX answers your most exacting requirements in a heavy-duty crankcase oil and when used regularly, it can add many hours to the life of heavy-duty gasoline and diesel engines. When tested and compared with a reference heavy-duty oil (of higher than average quality)—in laboratory engine tests and in over 1 million miles of field tests, inspection of dismantled engine parts revealed Essolube HDX gave *better* lubrication in vital areas:

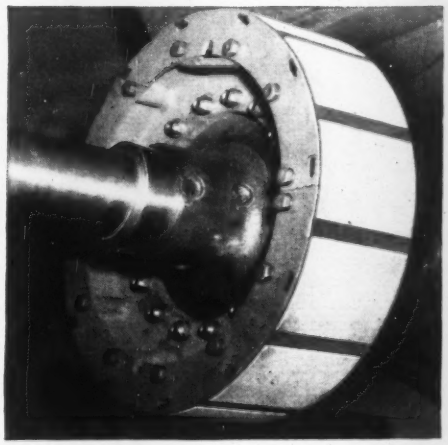
- Greater protection against wear in critically loaded engine parts such as cam shafts, valve lifters, and gears.
- Greater control of high-temperature varnish on pistons resulting in increased cylinder and ring life.
- Greater protection against low-temperature sludge formation in the crankcase to keep the engine clean.

For more information on how this outstanding oil can bring savings to your operation, contact your nearest Esso office, or write: Esso Standard Oil Company, 15 West 51st Street, New York 19, N. Y.

Esso

In Industry after Industry..."ESSO RESEARCH works wonders with oil"

New B.F. Goodrich Hi-Torque Brakes help C.F. Replogle Co. cut cycle time



Full circle stopping power of B.F.Goodrich Hi-Torque Brake allows safe hauling in higher gear – because it stops heavy equipment twice as fast as conventional shoe brakes.

CIRCLEVILLE, OHIO—After months of actual operating experience with the new B.F.Goodrich Hi-Torque Brake, C. F. Replogle Company reports "a definite cycle time reduction". Replogle, prominent contracting firm in Ohio and surrounding states, attributes this reduction entirely to the new brake "which allows safe hauling in higher gear".

With the new brakes installed for comparison tests on tractor-scraper combinations and heavy dump trucks, Replogle discovered many other advantages over conventional two-shoe brakes. For instance, maintenance down-time is reduced considerably, since the brakes are self-adjusting throughout the life of the lining. Job capabilities are expanded because the brakes give smoother, faster stops with less chance of fade—enable Replogle to run on terrain operators considered unsafe using conventional brakes.

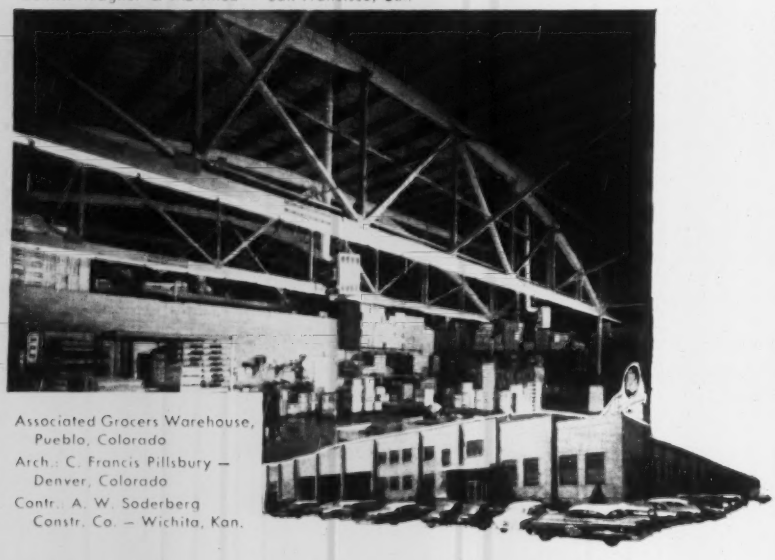
See how the *full circle* stopping power of B.F.Goodrich Hi-Torque Brakes can mean safer, more economical, more profitable operation of your own off-road equipment. Whether your field is construction, mining or logging, send for free booklet—The B.F.Goodrich Hi-Torque Brake. Gives operating features, specifications and test results. Write B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Troy, Ohio.

B.F.Goodrich Hi-Torque brakes

Blake, Moffitt & Towne Bldg., Portland, Ore.
Arch.: D. L. McConnell — Portland, Ore.
Contr.: Wagner & Martinez — San Francisco, Cal.

"BEAMS FABRICATED WITH EXTREME ACCURACY FIT INTO BUILDING VERY ECONOMICALLY"

says Contractor A. A. Martinez



Associated Grocers Warehouse, Pueblo, Colorado
Arch.: C. Francis Pillsbury — Denver, Colorado
Contr.: A. W. Soderberg Constr. Co. — Wichita, Kan.

"The glued beams were fully up to specifications, were prefabricated with extreme accuracy—*Our past experience has been different with other manufacturers*," says Contractor Martinez.

Each RILCO beam is carefully fabricated for *your* job—each connection fits. Nothing is left to guesswork. The beams arrive at the jobsite completely wrapped with holes drilled for connecting hardware furnished. Erection is fast and simple, even with inexperienced labor. This savings in time, plus low initial cost means a big savings in money.

The proof is in the using—Architect C. Francis Pillsbury says "I have used a great many RILCO trusses since this installation, Associated Grocers Warehouse, like them, and will use many more."

Besides fast erection and low cost, RILCO laminated wood members add utility, fire safety and outstanding beauty to school, church, factory or commercial buildings. Learn how RILCO can help you complete jobs on time, at a profit. Write your nearest RILCO office.

RILCO LAMINATED PRODUCTS, INC.
W801 First National Bank Building
Saint Paul 1, Minnesota

District offices:
Newark, New Jersey; Fort Wayne, Indiana; Tacoma, Washington

RILCO works wonders with wood

. . . Reader Comment

NSPE has given me was "fellowship." There are few civil and no mining engineers in our immediate area but I have established firm friendships with other self-employed engineers whose problems are the same as mine, and these friendships have been profitable.

ROBERT S. MAYO
Lancaster, Pa.

SIR—ENGINEERING NEWS-RECORD continues its plea to NSPE to join EJC "to help strenghten it as "voice of the engineer," yet in the same editorial of January 8, 1959, characterizes EJC as "often inarticulate, often inaudible." If EJC has failed to learn to speak after so many years of existence, it scarcely qualifies to be the "voice" of any organization.

NSPE is the logical spokesman for engineers on professional matters because it was organized for that specific purpose and is the only organization that devotes itself exclusively to professional matters for all engineers.

L. E. WINKELHAUS
Ann Arbor, Mich.

Snuper Blooper!

SIR: I would like to apply for the job of "Snuperintendent" as listed in ENR (Jan. 22, p. 119). I am one of the best "snoopers" in this part of the country.

Seriously, I merely wanted to call attention to this typographical error and suggest you pass it on to the READER'S DIGEST.

ALLEN JONES, JR.
Structural Engineer
Knoxville, Tenn.

For Your Calendar . . .

American Concrete Institute, Statler Hilton Hotel, Los Angeles, Calif., Feb. 24-26.

National Council for Stream Improvement, Waldorf-Astoria, Astor Gallery, New York City, Feb. 23-25.

Second Annual Building Congress on Urban Renewal, National Housing Center, Washington, D. C., Feb. 26.

National Lighting Exposition, Coliseum, New York City, Mar. 1-4.

32nd Highway Engineering Conference, University of Colorado, Boulder, Ohio, Mar. 5-6.

American Society of Photogrammetry, Shoreham Hotel, Washington, D. C., Mar. 8-11.

American Railway Engineering Association, Sherman Hotel, Chicago, Ill., Mar. 9-11.

American Society of Mechanical Engineers Aviation Conference, Statler Hilton Hotel, Los Angeles, Calif., Mar. 9-12.

American Congress on Surveying and Mapping, Shoreham Hotel, Washington, D. C., Mar. 11-14.

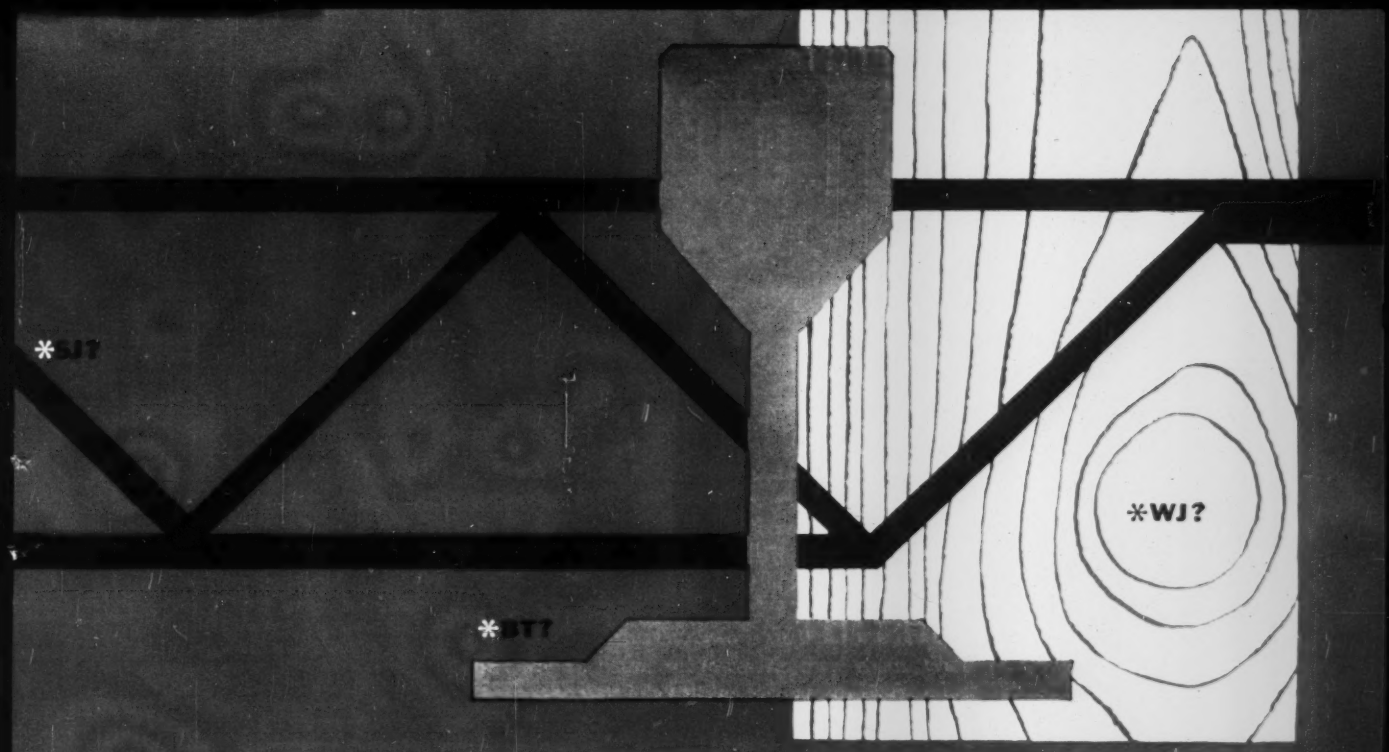
9th Annual Iron and Steel Conference, Pick-Roosevelt Hotel, Pittsburgh, Pa., Mar. 11-12.

Mississippi Valley Conference of State Highway Departments, Annual Convention, Edgewater Beach Hotel, Chicago, Ill., Mar. 19-21.

21st Annual American Power Conference, Hotel Sherman, Chicago, Ill., Mar. 31-Apr. 2.

Southern Municipal and Industrial Waste Conference, University of North Carolina in Chapel Hill, Apr. 2-3.

Building Research Institute's 8th Annual Meeting, Penn-Sheraton Hotel, Pittsburgh, Pa., Apr. 6-8.



Use FLINTKOTE INSULROCK®

. . . O.K. every way for roof deck construction

Insulrock Roof Decks mean steady, sturdy savings for all roofing jobs where Insulrock does the work of several materials

*Steel Joist, *Bulb-Tee, or *Wood Joist Constructions . . . apply INSULROCK roof decking for these practical, pay-off reasons:

Strength! Insulrock is the roofing slab bonded with portland cement. This makes Insulrock stay strong, rugged, tough. Its exposed-ceiling surface is treated with an indurating "cementitious" coating that imparts high resistance to abrasion.

Easy Installation! Insulrock lays down fast, on steel, wood, concrete framing.

Permanent Insulation! Air-pocketed, UL-listed, incombustible Insulrock gives high thermal insulation, increased air-conditioning economy.

No Weather Worries! Maybe your Insulrock roof decking is "out to the weather" while you're putting the built-up roof down. Weather doesn't faze Insulrock—because it is "weather-cured"—before you get it—by being stacked outside to "season" in rain, snow, freezeups, thaw, wind, sun, cold, heat. (This makes Insulrock perfect for ceilings of outside overhangs, covered walks, and corridors.)

No Extra Expense! The underside of Insulrock roof decking makes handsome, off-white, acoustical room ceilings that trap and absorb 80% of incident sounds. This ceiling, which you don't even have to finish, comes as a bonus—an Insulrock extra.

See how you save?

FLINTKOTE

MANUFACTURERS OF AMERICA'S BROADEST LINE OF BUILDING PRODUCTS

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DIVISION OF THE FLINTKOTE COMPANY

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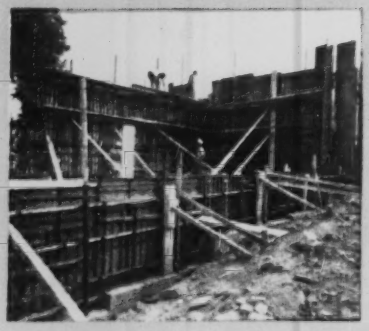
Los Angeles 54, California, LUdlow 3-3011 • Plants: Linden, New Jersey • Richmond, Virginia • North Judson, Indiana

ECONOMY offers 3 FORM SERVICES for concrete construction

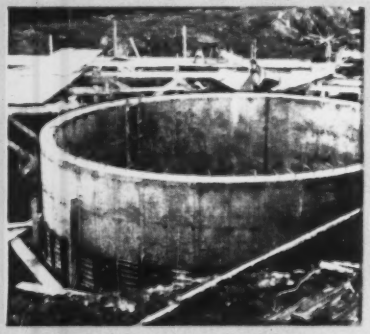


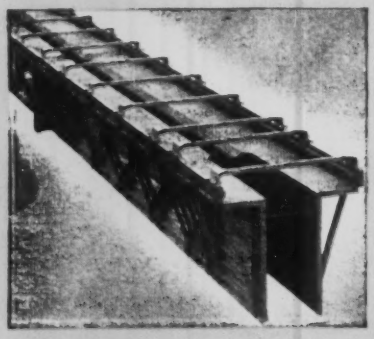
1. EFCO Steel Forms

Adaptable to a wide range of form requirements. Low original cost. Lifetime steel faces never need to be replaced. Free form erection drawings are supplied owners of EFCO Forms.

2. ECONOMY Steel Forms

Available on a rental basis for your larger, more difficult form requirements. Low rental. Saves time, material, money. These forms are supplied with supervisory service.





3. SPECIAL Economy Forms

These are steel forms built to your own specifications. At left is a girder form for:

PRECAST PRESTRESSED CONCRETE

FOR FURTHER INFORMATION

MAIL COUPON TODAY

Economy Forms Corp.
Box 128-A, H. P. Station
Des Moines, Iowa

Please send catalog on items checked:

☐ EFCO Steel Forms ☐ Economy Steel Forms
☐ Special Economy Forms

Name .....

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City ..... State .....

Coast-to-Coast Offices Provide Prompt Service

Charlotte, North Carolina
300 Clanton Road

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Denver, Colorado
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Fort Wayne, Indiana
Miller Road

Kansas City, Missouri
6225 Brookside

Lincoln, Nebraska
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Los Angeles, California
5718 Long Beach Ave.

Louisville, Kentucky
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Malvern, Arkansas
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Metuchen, New Jersey
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Minneapolis, Minnesota
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Springfield, Illinois
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Springfield, Massachusetts
292 Worthington

Tulsa, Oklahoma
1341 South Boston

Waltham, Massachusetts
751 Main St.

Washington, D. C.
1122 16th St. N.W.

Some Ideas

for your file of practical information on surveying
from
KEUFFEL & ESSER CO.

An anonymous Persian once said: "Luck is infatuated with the efficient." In line with this bit of good, dry wisdom, we present five items that, in their measure, will step up surveying efficiency . . . by permitting faster work, by promoting greater accuracy, or by doing both. For example . . .

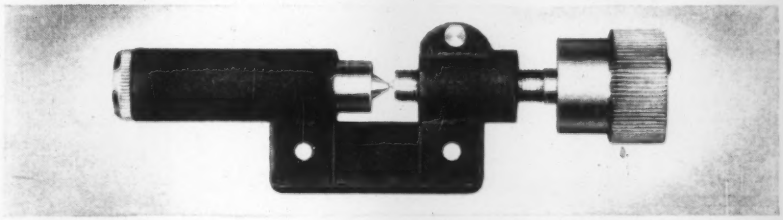
The New K&E Double Right Angle Prism

This simple, hand-held instrument belongs in every surveyor's kit. It bends the line of sight exactly 90° to left and right, so that you can quickly establish a right angle to your position between any two points – without the bother of setting up a transit. This can save you much time and effort when staking out small areas or laying out squares for contouring.

Objects straight ahead can be sighted clearly through a slot in the handle, even when they are at a steep angle above or below your position. Actually, the new Double Right Angle Prism is an improved edition of an earlier K&E model. Tests show that it's much more accurate. The prisms are much larger . . . points are picked up more quickly.

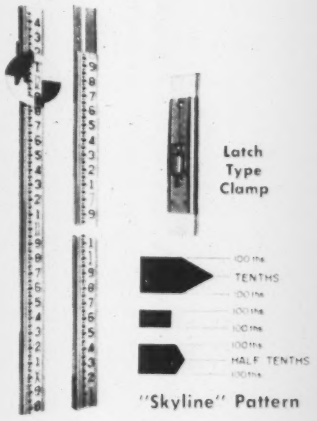
High and Low Gear Tangent Settings

Exact aiming and precise vernier settings are fast, smooth and easy with the new



K&E 2-Speed Tangent Screw. Its two sets of gears control rough adjustments separately, with one screw. Simply by reversing the tangent screw, you swing into "low gear" once the rough sighting has been made. Then, with the screw operating at a slower, finer ratio (4 to 1), you have firm, positive control of final settings. Hesitation and delay are eliminated, with considerable saving of time and temper for the whole field party.

The upper motion of every new K&E PARAGON® Transit is fitted with a 2-Speed Tangent Screw, as standard equipment. The new control may be specified for the other two motions as well. If you already have a PARAGON Transit (not more than 5 years old), you can order these time-savers individually, and install them yourself.

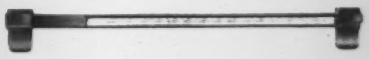


Rigid as a Steel Column

Here are two outstanding K&E features offered by the recently-developed Detroit Leveling Rod. The rod is made in three sections. Each of these is joined by an exclusive locking device – a latch-type clamp on a steel brace, drawing the sections together in rigid contact. When erected to its full 12.5-foot height, the Detroit Rod is as solid as one continuous bar. There is no wobbling or binding at the joints. Even habitual skeptics have called this "a revolutionary advance" over conventional locking methods. Another important feature: the new "Skyline" graduations, developed by K&E to make fast but accurate readings possible at greater distances, with less eyestrain. The distinctive pattern shows tenths of a foot, half tenths and hundredths – sharply on a clean, white background. Every Detroit Rod is furnished with a strong, mildew-resistant canvas bag, partitioned to hold the three sections. The bag is only 4'6" long.

New Tape Thermometer Snubs Air Temperature

On a winter afternoon, when the mercury can drop from a balmy 50° at noon to 20° at 4 pm, a 100 foot steel tape can shrink as much as 1/20 of a foot. A reliable tape thermometer assures accurate measurements by showing actual tape temperature – often 20 to 30° higher or lower than that of the air. K&E designed this new



tape thermometer so that the bulb may be *clamped* tightly against the tape surface. It reports the *tape's* temperature, not the air's. Above-zero readings appear in black, below-zero in red. The instrument complies with rigid Government specifications.

Red and Yellow and Seen All Over

For years, surveyors have protected life, limb and property by painting tripod legs in loud colors. Now, all K&E wide-framed tripods are available *pre-painted* in high-visibility yellow, with a bright red stripe. You can throw away your paint brush!

All these products may be seen and had at your nearest K&E dealer. Stop in and see them. Or simply clip and mail the coupon below . . .

KEUFFEL & ESSER CO., Dept. EN-2, Hoboken, N. J.

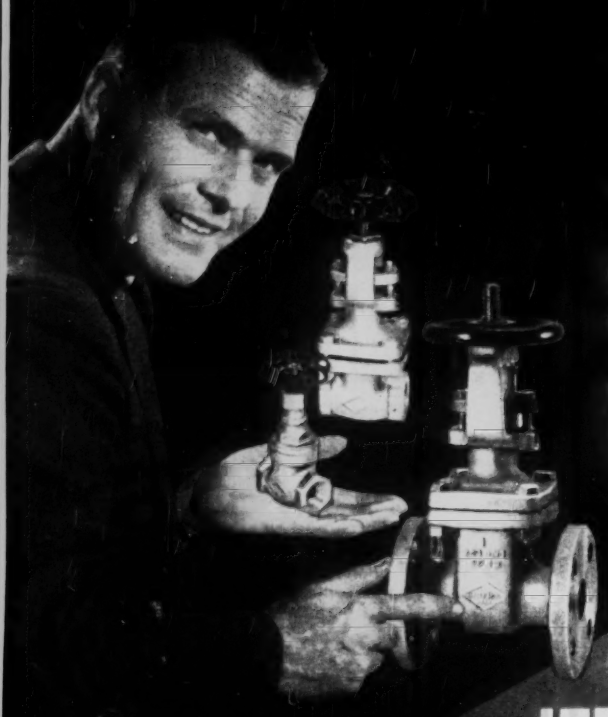
I'd like to know more about:

- ☐ K&E Double Right Angle Prism
- ☐ 2-Speed Tangent Screw
- ☐ New K&E Tape Thermometer
- ☐ Detroit Leveling Rod with "Skyline" Graduations
- ☐ New 2-Color Tripods

Name & Title_____

Company & Address_____

1624

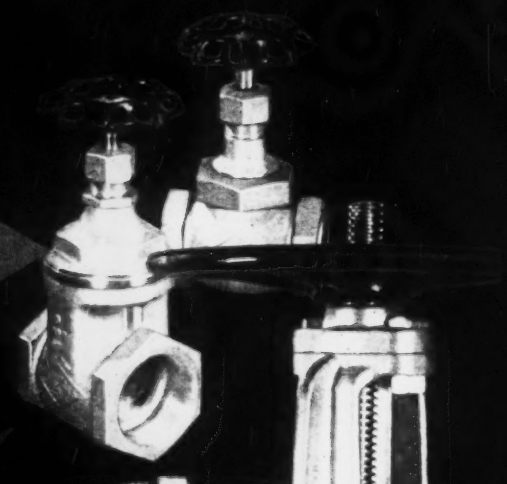


It's a good feeling to see this trusted mark on your

STAINLESS STEEL VALVES *too*

JENKINS®

Jenkins Bros.



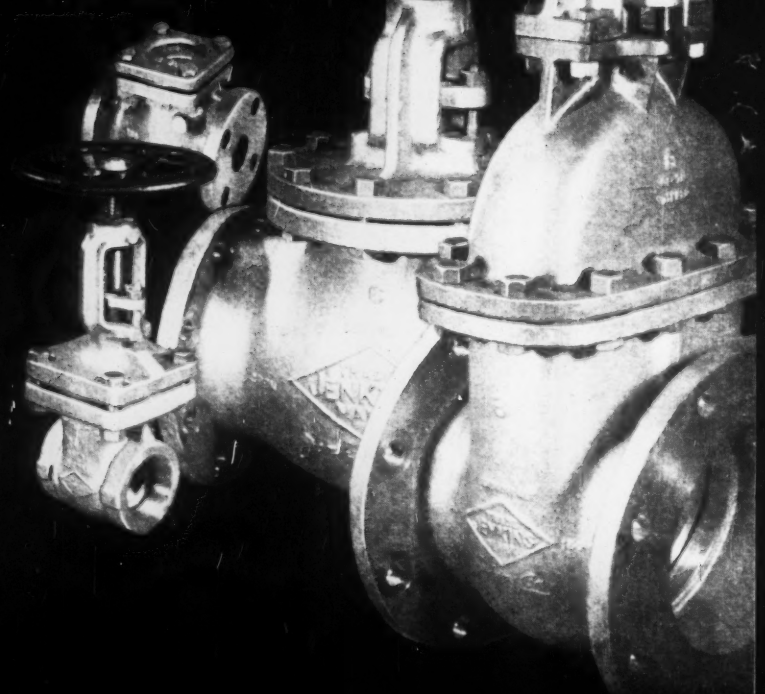
PATTERNS AND ALLOYS TO SATISFY MOST INDUSTRIAL NEEDS

For solid reasons, men who ask for the best in Stainless Steel Valves have full confidence when they see the Jenkins Diamond. For almost a century this mark has appeared only on valves made to peak standards of quality in design . . . in castings . . . in machining. JENKINS standards, enforced by the most rigid inspection and testing in the valve industry.

Valves of corrosion-resistant stainless steels have been made to those high standards by Jenkins for a quarter of a century. And today, the line of Jenkins Stainless Steel valves includes types and alloys to fully satisfy most service requirements.

They are available through the same leading distributors everywhere who sell Jenkins Valves of Bronze, Iron and Cast Steel. Jenkins Bros., 100 Park Avenue, New York 17, N. Y.

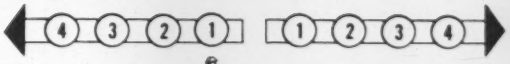
NEW JENKINS STAINLESS STEEL VALVE CATALOG
Send for your copy today.



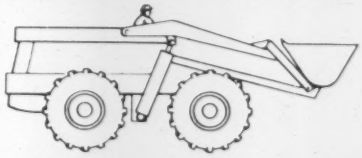
only the HYDRA-DRIVES® BDB

OFFERS ALL THESE MAJOR ADVANTAGES

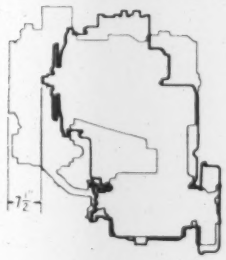
IN FULL-POWER SHIFT TRANSMISSIONS for equipment from 60 to 175 h.p.

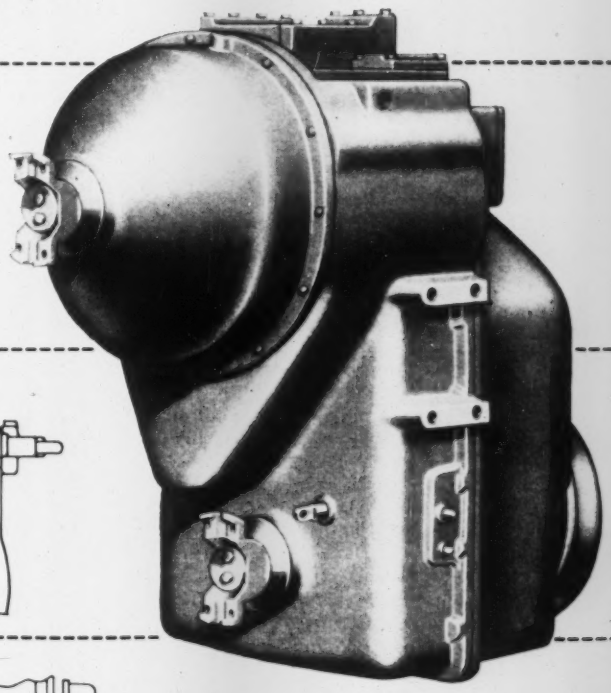


4 speeds forward and reverse. All power shifted! Provides maximum horsepower to load under all load conditions.

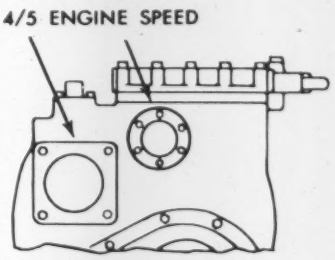


Integral design. Torque converter, transmission, oil passages, valving and oil sump are in *one* compact housing—7½" shorter than comparable models.

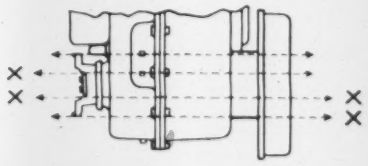




Dual reduced speed pump drives. Pumps can be driven at engine speed or 4/5 engine speed for longer life and increased horsepower to pump load. Single pump drive is also available.



Full disconnect provides four combinations of split drive . . . from torque on both shafts, to both shafts in disconnect.



SPECIALLY DESIGNED FOR SMALLER INSTALLATIONS

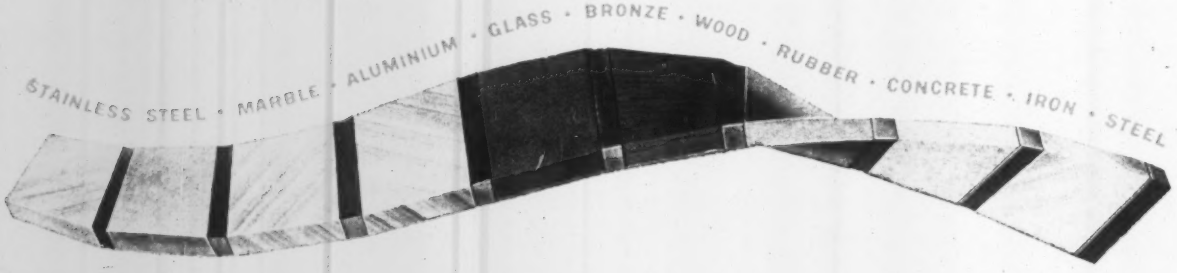
Rockwell-Standard's new model Hydra-Drives Full Power Shift Transmission is now available in sizes especially designed for smaller installations, such as front end loaders, fork trucks, scrapers, crane carriers, rubber tire tractors and military vehicles.

In addition, the Hydra-Drives BDB offers easier servicing and maintenance. There are fewer moving parts and bearings. The simple, rugged countershaft design and spur gears simplify maintenance.

HYDRA-DRIVES
ROCKWELL-STANDARD CORPORATION
TRANSMISSION AND AXLE DIVISION
DETROIT 32, MICHIGAN

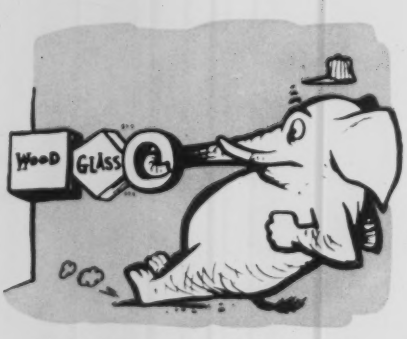
©1959, R-S Corporation

Here's a multi-material sealant that rubber ***welds*** curtain walls, glass enclosures, store fronts, gas stations, roofs, copings, flashings, expansion joints, mullions, sidewalks, flooring, pipe joints and passages, air conditioning ducts and units.



THE "ADHERENTLY" DIFFERENT SEALANT

based on THIOKOL *liquid polymers*



Adhesion makes the difference. Bonds to practically all building materials. Will not flow from joints under heat, stress, or traffic.

Elasticity makes the difference. Gives with building motion. Expands, contracts as structure demands. Cushions against vibration. Absorbs shock.

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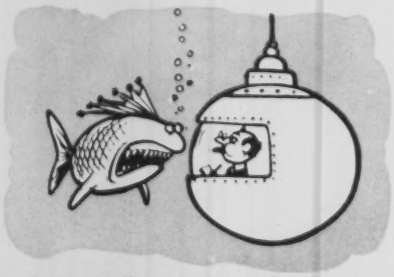

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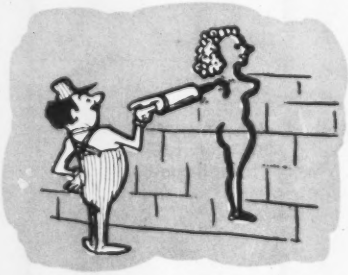

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easily loads over side or end of truck. 3 types of interchangeable buckets (rock, rehandling, and general-purpose) assure big payload performance in all materials, on all types of jobs.

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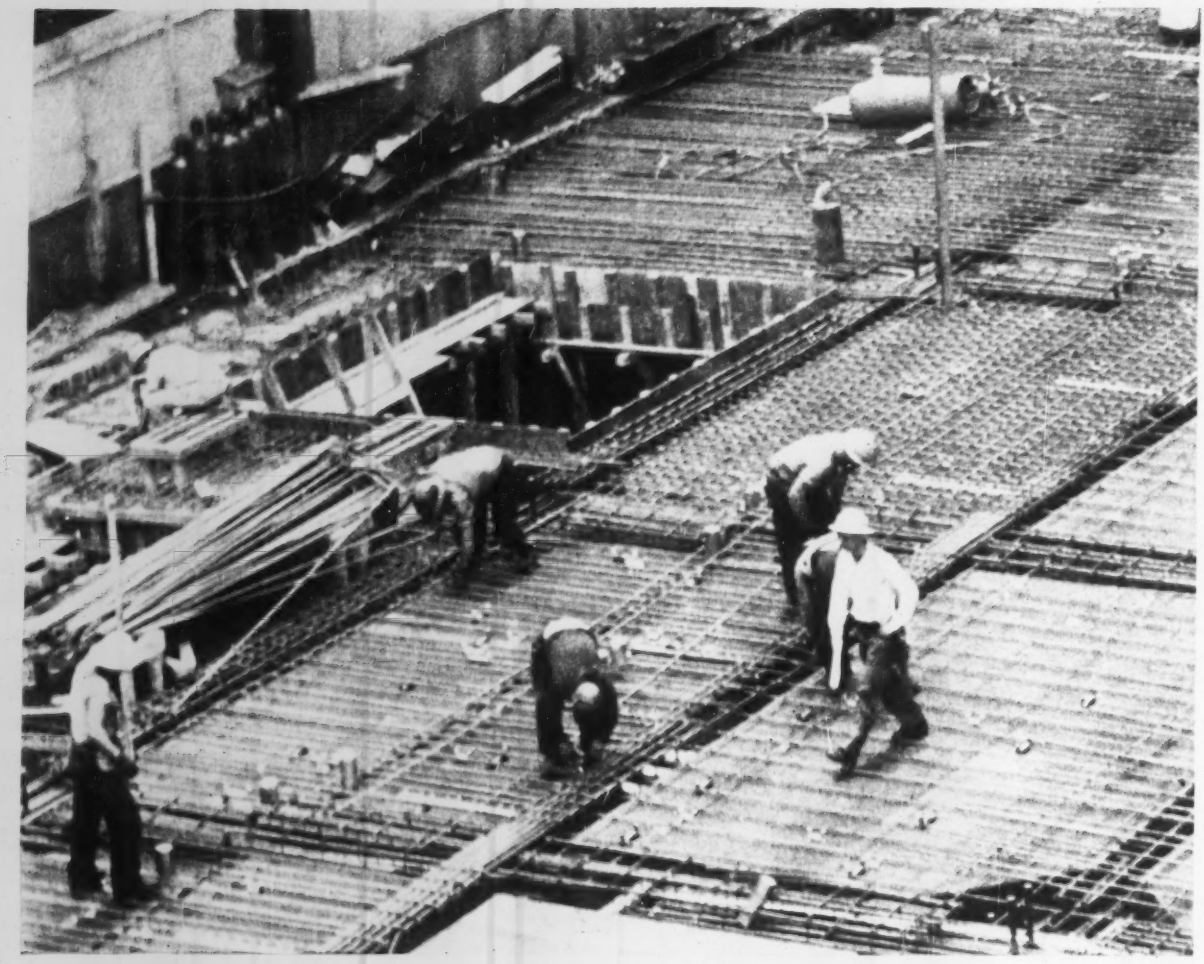

View of foundation work on new 23-story Harris Trust & Savings Bank building, Chicago. Architect: Skidmore, Owings & Merrill. General contractor: Turner Construction Company. Re-bars from Ryerson.

"An exceptionally fine performance on an extremely tight schedule"

says Turner Construction Co. engineer

Foundation work for the new Harris Trust & Savings Bank, Chicago, called for a tight three-shift schedule. Turner Construction Company called on Ryerson for detailing, fabricating and on-schedule delivery of reinforcing steel.

Here's what H. D. Conant, Turner engineer, had to say about Ryerson's service: ". . . your spirit of cooperation coupled with an exceptionally fine performance deserves special mention. We sincerely appreciate the fine efforts made by all concerned in your organization."

Many leading contractors, like Turner Construction Company, rely on Ryerson for a complete reinforcing steel service. The reasons: Ryerson has unequaled stocks and fabricating capacity to keep pace with any job's progress . . . delivers steel exactly when needed—accurately cut, bent and tagged for quick placement.

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Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

INTERSTATE: BUILD NOW, PAY LATER?—Congress will say "no" to President Eisenhower's request for a 1½ cent boost in the federal gasoline tax to keep the Highway Trust Fund in the black. That's the word from Rep. Wilbur Mills, chairman of the tax-writing House Ways and Means Committee. Congressional sentiment has been building against the increase. But trust fund allocations to the states are not likely to be reduced. Congress will probably suspend the pay-as-you-go Byrd Amendment again. Question: If the President vetoes a suspension, will Congress be able to override?

COOLING UNITS RATED—From now on you can specify capacity of air-conditioning equipment, as well as heating units, in Btu's, instead of tons or horsepower. Thirty-three manufacturers, representing 80% of the total U.S. production of unitary equipment, have already signed contracts to rate units in accordance with standards of the Air-Conditioning and Refrigeration Institute.

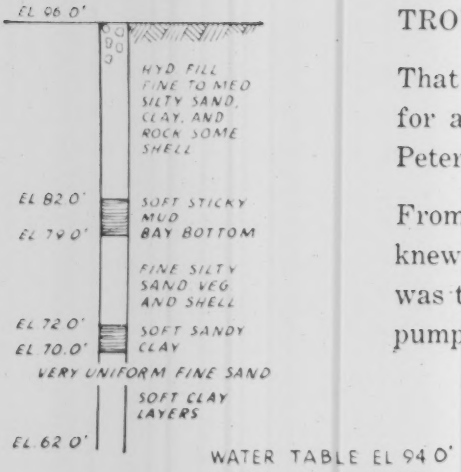
BATTLING BUILDING COSTS—Building material manufacturers are worried about the rising selling costs of their products. Although improved production efficiency has helped slow the wage-price spiral, they are still losing the battle. Now manufacturers plan to attack on another front. Producers' Council has engaged two consultants to study marketing and distribution toward improving efficiency in these areas.

LUMBER FIGHT: SOUTH VS. WEST—A battle between southern and western lumber interests may be coming. A provision recently added to the model code of the Southern Building Code Congress limits moisture content of house framing lumber to 19%. Southerners claim western producers of Douglas fir are trying to prevent adoption of the new standard at the local level. Behind the dispute appears to be a drive by Dixie lumber producers to push southern pine in the home market.

MILESTONE AT GLEN CANYON—Diversion of the Colorado River began at Glen Canyon Dam in northern Arizona last week. First water is flowing through the right diversion tunnel. Full diversion will be achieved in a few weeks when water starts flowing through the left tunnel, 35 ft higher than the right.

THE JERSEY BOUNCE—Gov. Robert B. Meyner has cut $99.9 million worth of construction out of New Jersey budget requests. In trimming total requests of $530.4 million to $403.3 million, the governor scotched $9.3 million in highway maintenance, $25.6 million for repair of state institutions, $18 million for a new state prison, $13 million for a new mental hospital and $10.8 million for Rutgers University.

MORETRENCH WELLPOINTS CHANGE A PROBLEM INTO A PLEASURE...



Twenty feet of water in silty sand with clay layers spell TROUBLE!

That was Florida Power Corporation's problem in excavating for a Discharge Canal for the Paul L. Bartow Plant in St. Petersburg, Fla.

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Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario

Brazilian Representative: Oscar Taves & Co., Ltd., Rio de Janeiro

WASHINGTON OBSERVER

• Buy American decision nears. US may let the states make their own decisions on foreign materials

• **The simmering issue of state laws and regulations banning foreign raw materials in the highway program is coming to a boil.**

So far the federal government—through Secretary of Commerce Lewis Strauss and Highway Administrator Bertram D. Tallamy—has been trying hard to postpone making any rule one way or the other. But the feeling is that federal approval or disapproval of such state laws and regulations will have to come soon.

At least a dozen states already have some sort of restriction on imported materials—and the list is sure to grow unless the Administration decides such restrictions violate federal law or federal policy. The federal interest

The market is huge: A rough estimate indicates around $400 million restrictions on the U. S. market for foreign products are an ever-sharpening issue in our foreign policy.

The market is huge: A rought estimate indicates around $400 million each will be spent for cement and structural steel alone this year. That's for all federal-aid highways, not just the 40,000 mile interstate network. In theory, government policy requires all purchases to be made on open, advertised bids to give the taxpayer the lowest price for materials that are rigidly specified. But there are many exceptions: In construction, for instance, the federal Buy American law permits agencies to give higher-bidding domestic firms a contract for power-producing turbines and generators providing they're no more than 6% higher (12% in some cases) than the qualified low foreign bid.

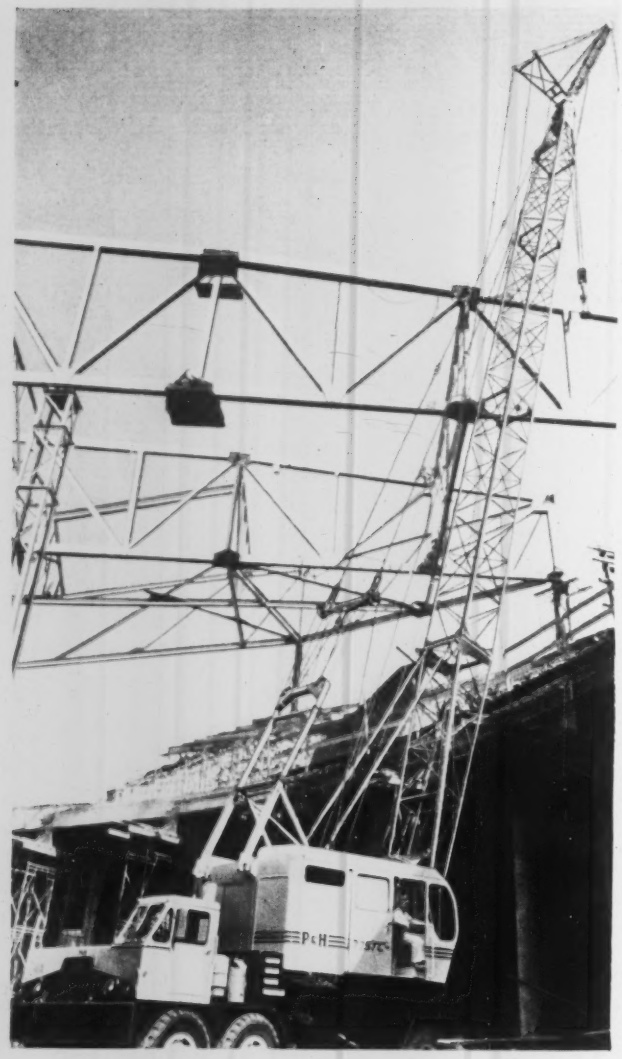
Steel companies are already lobbying on behalf of state Buy American laws to ward off the threat of foreign competition. This competition will loom larger as the federal highway program moves into the peak construction stage. Steel manufacturers know that suppliers from such countries as Belgium, Germany, and Japan can take business away from them in many parts of the country. (The St. Lawrence Seaway, for instance, will open the whole Midwest to freighters from abroad.)

Mr. Tallamy last summer told Texas—at Texas' request—that the Bureau of Public Roads could not sanction the state's proposed ban on foreign materials. But at the same time, he specifically noted that, in answering the question from Texas, BPR was not setting a national policy. In fact, the grapevine carried this word from Commerce: "Go ahead with bans on foreign suppliers, if you like—just don't ask us whether we approve."

Mr. Strauss is leaning toward a "hands off" attitude, according to the latest hints from Commerce officials. That means leaving the decision up to the individual state. This in turn means, the experts say, that most states will shortly adopt Buy American laws or regulations.

State Department hasn't been heard from yet. It normally has a big hand in such matters and is expected to have its say. It was only last year that the Administration pushed through Congress a reciprocal trade program aimed at reducing trade barriers.

P&H DIESEL POWER
produces 70-ton "profit-lifts"



Power to improve performance and cut fuel costs in half—that's the way Heisler & Woods describe their experience with the P&H Diesels that power their 70-ton P&H 775-TC truck crane. It is shown here erecting steel for the Los Angeles County Coliseum Arena.

P&H Diesel power produces "profit-lifts" because of these advantages:

- **P&H Diesels are powerful and responsive. When a crane picks up a heavy load, even on an idle engine, the P&H Diesel responds instantly.**
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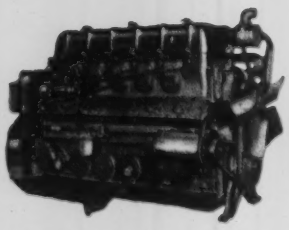
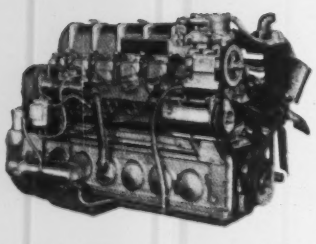
For all your original equipment and repowering needs, specify the one diesel with all the features that improve crane performance and lower costs—P&H Diesel! See your P&H dealer or write for "Power For More Profit" Bulletin Z-26.



6-cyl. P&H Diesel Industrial Engine for crane "upper"—205 H.P.



6-cyl. P&H Diesel Automotive Engine for crane "lower"—280 H.P.

OUR 75TH YEAR

HARNISCHFEGER

P&H Diesel Engine Division
Crystal Lake, Illinois

Cities must spend more of their own money for jet-age airport needs, says Elwood Quesada, head of the Federal Aviation Agency.

But the odds are he won't be able to sell this theory to the Democratic Congress.

Here's a report on the struggle and what it means to construction men.

How Much Aid Do Airports Need?

U. S. cities face a clear choice in modernizing their airports: They must depend more on their own resources, less on those of the federal government. Otherwise they risk becoming jet-age whistle stops.

That's the view of Gen. Elwood (Pete) Quesada, head of the new Federal Aviation Agency, as expressed to ENGINEERING NEWS-RECORD.

The former Air Force general is carrying the ball for the economy-minded Eisenhower Administration in a head-on clash with Congress over the federal airport aid program.

The outcome will have an impact on both the pattern and quantity of spending for airport construction and improvements in the next four years. Either way, the program adds up to a billion-dollar item in the next few years (ENR Dec. 4, 1958, p. 21).

General Quesada says two-dozen airports already are capable of handling jet airline traffic, and the number should grow to 78 within four years—if local communities do their part. Otherwise, he fears the entire airways modernization program may fall seriously behind schedule.

Capitol Hill Democrats don't quarrel with his figures—so long as it's recognized he is talking about strictly limited jet operations. No airport is yet capable of handling high volume jet traffic.

But they do disagree sharply on how the modernization program is to be carried out.

The lines between the two sides are clear-cut:

• **General Quesada and the Administration say aviation is out of diapers and doesn't need as much federal aid.** Airlines are now the nation's largest intercity carriers; some airports are self-sustaining now. "In the not-very-distant future the vast majority of our airports will either be self-sustaining or on a sound enough economic footing to call for assumption of full financial responsibility on a local or state basis," General Quesada says.

The Administration wants to provide $200 million in federal-aid matching funds in the next four years. But it also wants to withdraw federal money gradually from airports during that period.

• **Democrats, backed solidly by the aviation industry and the nation's mayors, say a vigorous federal role was never more important than now**—during the transition to runway-eating jet aircraft. Local financial resources simply aren't sufficient.

Senate Democrats have already pushed through a bill to provide $465 million in the next four years. And signs are that the measure finally placed on the President's desk will be close to that figure.

Democrats are confident they can override a White House veto, if it comes.

• **Full of fight**—If General Quesada is on the light end of the seesaw, he is still taking the fight to the opposition.

In a recent appearance before the House Commerce Committee, he vigorously attacked the Democratic program as one based on "unrealistic" estimates that often as not stem from nothing more than "gluts in the airport operators' eyes."

The Democratic approach involves federal matching funds at a $400-million-per-year level. It's based on estimates that a total of some $1.2 billion should be spent in the next four years to meet the needs of the nation's 3,000-odd public airports.

General Quesada, however, says the "realistic" requirements total only $500 million if you wring out these "inflationary" factors:

• Fewer than one out of five cities will ask for federal matching funds—and a far smaller percentage is willing and able, in the end, to provide their share of the money for "dream" airports.

• It's human nature to ask for more than you need. So about 45% of the stated requirements can be attributed to exaggerated requests.

(*Turn the page*)

• Historically, 50% of the program represents construction of terminals and other items "beyond the gate." Under the Administration program the government would not share these costs.

General Quesada's view: "Our interest begins when the passenger gets on the plane and ends when he gets off. The man from Michigan should be assured of a safe landing in Dallas. But the taxpayer has no responsibility to make him comfortable in the terminal. That's up to the local people."

• **Construction's stake**—The difference in approach is important to construction men. **More than $65 million of federal money has been allocated for terminals and related facilities since 1956.** The Democratic Monroney bill would prohibit future federal allocations for parking lots or "frills" like cocktail lounges in the terminals. Still, indications are that close to one dollar out of five in the Democratic program would go for terminals and related facilities. **The Administration would prohibit all such expenditures.**

Another difference shows up in the attitude toward small airport maintenance. Democrats would provide funds for the periodic seal-coating of flexible airport pavements and filling of joints in rigid pavements at airports not served by FAA control towers. General Quesada would not.

General Quesada denies any implications that he's not sufficiently worried about the tremendous requirements of the jet age. He recognizes the booming growth in aviation traffic and the complexities created by the expected introduction of some 400 jet airliners in the next few years.

However, he points out, the federal government will spend more than $500 million this year for air traffic control equipment and operations. Since airports are a civic asset important to the commercial life of a community, he feels, provision of adequate runways, taxiways and lighting is "basically a community responsibility to which the government will contribute" where safety factors dictate and local resources are truly not adequate.

But he has little patience with requests for federal aid from communities that already have matured as air traffic centers.

The Los Angeles terminal, he says, earns $2 million per year; Washington National Airport, the only one operated by the federal government, also turns a handsome profit.

Other large cities can earn money with their airports "if the government can," says General Quesada. "Uncle Sam is not noted for efficiency in the conduct of business. If Los Angeles can't pay for its own improvements, the people out there should be ashamed."

"The community must improve the airport or lose the business," says Quesada.

On the other hand, he praises Toledo for not requesting a penny of federal money for its airport.

The FAA chief says the jet age has not been delayed thus far because of any lack of adequate airports. And he says it won't be unless the communities fall down on the job.

• **What is adequate?**—The generally accepted conception of "adequacy" is this: An airport is adequate if it is capable of handling jet aircraft that fly the same routes as are now flown by piston-engine aircraft.

This was evidenced in the standards issued by FAA last October in which runway requirements for turbine-engine craft were laid out as follows:

• **Intercontinental airport—10,500 ft.** These are the airports, like New York's Idlewild, that will handle nonstop trans-ocean flights.

• **Continental airports—7,500 ft.** These are airports, like Washington National, that handle long nonstop flights up to 2,000 miles.

• **Trunk airports—6,000 ft.** These are airports at cities from which flights normally do not exceed 1,000 miles. They're not expected to handle commercial jets.

• **Local airports—4,200 ft.** These are airports to serve local service flights that normally do not exceed 500 miles. These won't handle commercial jets.

Runway requirements vary with altitude, temperature and fuel requirements. A Boeing 707, for example, flying from Dallas to New York can get off a runway of 7,500 ft or less. The same plane flying from New York to London might require 10,000 ft.

All this, however, leaves two big problems facing jet aircraft operators.

• With "adequacy" geared to current flight schedules, any plans for longer hops to take full advantage of the jets' great speed must wait until airport improvements are made.

• Most "adequate" airports have only one runway long enough to meet the requirements. This is acceptable only when a few jet flights a day are handled. But to handle heavy volume, parallel and alternate runways must be built, high-speed turnoffs from runways must be added, and lead-in lights must be provided.

As FAA itself has recognized in planning its airways modernization program, it does no good to develop an efficient system of navigation and communication facilities if an antiquated airport becomes a bottleneck.

General Quesada says his four-year plan takes all this into account—and needs will be met as they arise if the communities meet their responsibilities.

The ex-general hopes, and believes, that the transition to jets will encourage the construction of "regional" airports serving more than one city.

• **Who's Quesada?**—The political odds are stacked against General Quesada in his joust with a heavily Democratic Congress. But in a town where top bureaucrats often are not well backgrounded in the field in which they must work, General Quesada has one big advantage—his impressive aviation background.

The lieutenant general retired from the Air Force in 1951, but re-entered government service when President Eisenhower called on him for advice on meeting the appalling air traffic control problem developing on the airways.

He impressed many Capitol Hill skeptics with his skill in helping to create the Federal Aviation Agency.

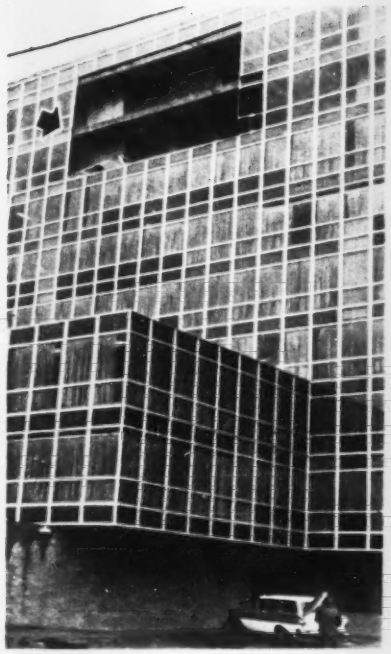
Fears of military domination of the agency have been softened in part by his quiet, rather shy demeanor.

Still, there is some irritation in aviation circles over the vigor with which he has defended the Eisenhower economy program as it applied to aviation. Some of this has spilled over into Congress.

Probably the biggest question now is what General Quesada will do if, as expected, the Democratic Congress dumps a lot of unwanted money in his lap. There are those who think he will be secretly pleased, and find ample places to spend it.

But there is no way—Congress can force him to use the money. And he gives every sign of a man who has decided firmly that local communities will find the necessary money if they see not so much is forthcoming from the federal government.

When asked what happens if a community fails to provide itself with an adequate airport, he replies, simply: "The air traffic eventually will go somewhere else. So the community must improve the airport or lose the business."



HOLE IN THE WALL of this new building (left) marks the spot where glass and tile exterior wall caved in during a windstorm. The structure has other troubles as . . .

Failures Plague Courthouse

Perturbed officials of Jefferson Parish, La., have ordered a renewed structural survey of the parish's new $2 million courthouse in Gretna, near New Orleans. The reasons:

• Only a few months after the nine-story building was dedicated, a large crack appeared in its reinforced concrete roof.

• The building's glass and tile exterior wall failed during a windstorm last month, leaving a 32-ft-wide hole in the eighth and ninth floors.

The wall failure occurred only a few days after the parish council received a report from engineers, Patrick M. Allison and Associates, New Orleans, on what were called "obvious defects."

The report said a hazardous condition was created by improper fasteners for exterior concrete block walls inside the glass exterior on the upper floors.

The report said some window walls were not substantially fastened to the structural frame "and that the glass thickness is not adequate to accommodate the surfaces covered."

The engineers urged that double horizontal bar handrails be installed along the ceiling-to-floor windows "to protect life and limb."

No settlement in foundations or primary structural frame was found in the survey. The engineers said that cracks noted in the building earlier were caused by improper expansion joints and masonry anchors.

R. P. Farnsworth and Co., New Orleans, contractor on the building, said it will move speedily to determine the cause of the latest damage. The company began repairs immediately.

Ice Bridge Becomes Frozen Asset

Refused permission by city officials to build a temporary wooden bridge that would cut four miles from a haul, a Canadian gravel company is now using a bridge of artificial ice.

Twin Bridges Sand & Gravel Ltd. of Edmonton, Alberta, is saving $45,000 by routing its trucks over the North Saskatchewan River on the ice bridge.

The ice bridge was built at the suggestion of R. M. Hardy, dean of civil engineering at the University of Alberta. Some 5,000 ft of plastic pipe are laid in the river. A refrigerant pumped through the network of pipe keeps the river's existing ice built up to a 3-ft thickness.

The result is a lane of ice 150 ft long and 30 ft wide capable of supporting the 25-ton payloads carried by the company's trucks. It cost $40,000 to build.

Twin Bridges Sand & Gravel expects to save 600,000 ton-miles by using the artificial ice bridge. The firm will sell the ice-making equipment when the job is completed.

Zoning Proposal

Plan for rezoning NYC is based on new concepts

A proposed zoning ordinance to insure orderly growth and progress of New York City is being studied by the city's Planning Commission. It is included in a 376-page report prepared for the commission by Voorhees Walker Smith Smith, architects-engineers, New York City [now Voorhees Walker Smith Smith & Haines (Feb. 12, p. 59)].

"Our present ordinance," says commission chairman James Felt, "is a much-amended, patched-up version of the 1916 zoning resolution, the first in the country. Forty years ago it represented great progress but it is an anachronism . . ."

The proposed zoning, reports Percy Coke Smith, senior partner in charge of the study for the consulting firm, represents a natural evolution and improvement of modern zoning concepts and techniques. It is based on new zoning ordinances adopted in recent years by several big cities.

• **What the plan will do**—The proposed zoning could accommodate homes for about 11 million persons—2.6 million more than the city's estimated population in 1975. It provides for growth, but avoids overbuilding and congestion in some parts of the city and waste and blight in others. Present zoning regulations permit 55 million residents.

The consultants propose a single-map system for indicating zoning restrictions. It has 47 different types of integrated districts. There are now 286 combinations of districts actually mapped and more than 1,000 possible in the present three-map system.

Use, building bulk, density and parking will be controlled in every district. The consultants propose establishment of two major categories of residence districts, eight commercial districts and three manufacturing districts. Residential development will be excluded from manufacturing districts.

Three alternatives are offered to insure adequate light and air to buildings and streets, yet permit a high degree of design freedom. One alternative establishes an imaginary envelope beyond which buildings cannot project and that may require setbacks in tall buildings. A second regulates height in accordance with distance buildings are set back at street level. The third, primarily for towers, may eliminate the need for setbacks in buildings covering 40% or less of the site.

The City Planning Commission will hold hearings on the proposal before submitting the proposed ordinance to the Board of Estimate.

ASCE Ponders Union Problem

Problems other than technical had stage center as the American Society of Civil Engineers met in Los Angeles last week.

Although engineers presented 150 technical papers, ASCE gave its primary attention to three general sessions on these matters of professional concern:

- Engineers in unions.
- Engineers in civil service.
- Engineering education.

Discussions of these often-controversial subjects were programed by the society's Department of Conditions of Practice. Here is what the convention-goers heard.

• **Engineers in unions**—Engineers, both employers and employees, can learn to live with unionization. Engineers' unions have many advantages—also some dangers.

Three California engineers described the 15-year history of engineering unions in the San Francisco area. The three—William W. Moore, of Dames and Moore; Arnold L. Olitt, of Woodward, Clyde, Sherard and Associates; and Jack Y. Long, of J. Y. Long Co., Engineers—are employers who have dealt with engineer unions.

They cited an indirect advantage of union activity.

Employers actually have been forced to band together. This has led to exchanges of information on other subjects in addition to unionization.

Also the fact that employees are represented by duly elected unions has minimized interference from other unions. Pay and working conditions have been improved and standardized. This benefits employer and employee.

• **Disadvantages**—A distinct disadvantage to an employee, according to Mr. Olitt, is that the minimum wage included in the union contract is usually considered the maximum. And management is not so lenient with sick leave, vacations and retention of employees during slack periods.

There are other great drawbacks, according to Jack Long. A young engineer tends to specialize under unionization and thus not get the broad background necessary for proper professional development. This tends to lower the engineer to technician status, with work too often directed by nonprofessionals.

There is also the problem of defining the place where technical classifications stop and professional positions begin. Mr. Long said he is not convinced that unions have reached the objectives offered to their members and to the employers.

• **Engineers in civil service**—The work of the newly formed Committee on Engineers in Public Practice was brought up for the first time at an open meeting.

Salary problems faced by civil service engineers were emphasized by the committee chairman, M. J. Shelton, of Koebig and Koebig, San Diego consulting engineers, and formerly deputy director of the California Department of Water Resources.

He pointed out that 40% of the civil engineers in the U.S. are employed by some branch of government. He said one reason proportional enrollment in civil engineering education is declining is because of inadequate salaries or opportunities.

This ASCE meeting concentrated on problems faced in state and local governments. Problems of federal agencies will be covered at a session of ASCE's fall meeting in Washington, D. C.

State government engineering personnel problems were covered by Prof. Robert D. Gray of California Institute of Technology, who is president of the California State Personnel Board. Professor Gray decried the inability of state governments to use pay as a performance incentive for engineering managerial and professional positions. Employers in private industry, he said, are able to use pay as a reward for outstanding performance and they are able to base salaries on merit rather than longevity.

Jean Vincenz, Director of Public Works for San Diego County, represented local government in the discussion. He echoed other speakers' calls for more data on employment conditions in government engineering jobs. But he cautioned that comparisons should be made of comparable things.

Mr. Vincenz pointed out that problems of engineers at the supervisory level are not necessarily the same as those of engineers at lower echelons. And he urged higher echelon employees to recognize the problems of their subordinates and to do whatever possible to help solve them.

• **Educating engineers**—Continuing concern over the supply of engineers is a matter of both quantity and quality, according to Lord Dickerhoff, personnel director of Hughes Aircraft Co.

He pointed to the alarming 15% drop in freshman enrollments at engineering schools last year. And he noted that this year there will be only 39,000 engineering graduates to fill an expected 55,000 jobs.

Hope for the future was offered by Robert E. Kelly, associate superintendent of Los Angeles City schools in charge of secondary education. He pointed out that while the U.S. population grew 12% between 1950 and 1957, enrollment in secondary schools grew 46%. And in the Los Angeles secondary schools in the same period, enrollment in math, physics and chemistry grew at a much faster rate. Mr. Kelly pointed out that there are increasing problems in staffing technical teaching positions in the secondary schools.

Hardy Cross Dies; Noted Structural Analyst

One of the outstanding structural theoreticians of our time died last week. Hardy Cross, who developed a popular method for computing stresses in continuous structures, died at Virginia Beach, Va., at the age of 74.

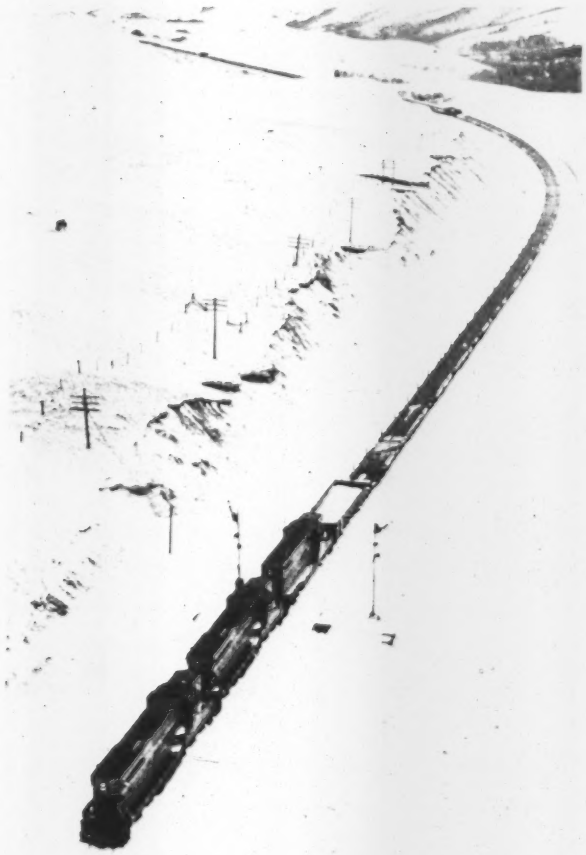
Mr. Cross was head of the Department of Civil Engineering at Yale University before he retired in 1951. Earlier he had been professor of structural engineering at the University of Illinois, from 1921 to 1937. He also taught civil engineering at Brown University from 1911 to 1918.

Mr. Cross received B.A. and B.S. degrees from Hampden-Sidney College in 1902 and 1905 and a B.S. in Civil Engineering from Massachusetts Institute of Technology in 1908. He obtained an M.C.E. from Harvard University in 1911.

Though he established an excellent reputation as an engineering educator, Mr. Cross is best known for his development of simplified methods of analysis by means of converging approximations. One of these, fixed-end moment distribution for analysis of continuous structures, encouraged greater use of continuity because of the ease with which stresses could be calculated by this method. Converging approximations, as applied by Mr. Cross, also made determination of flow in pipe networks easier.

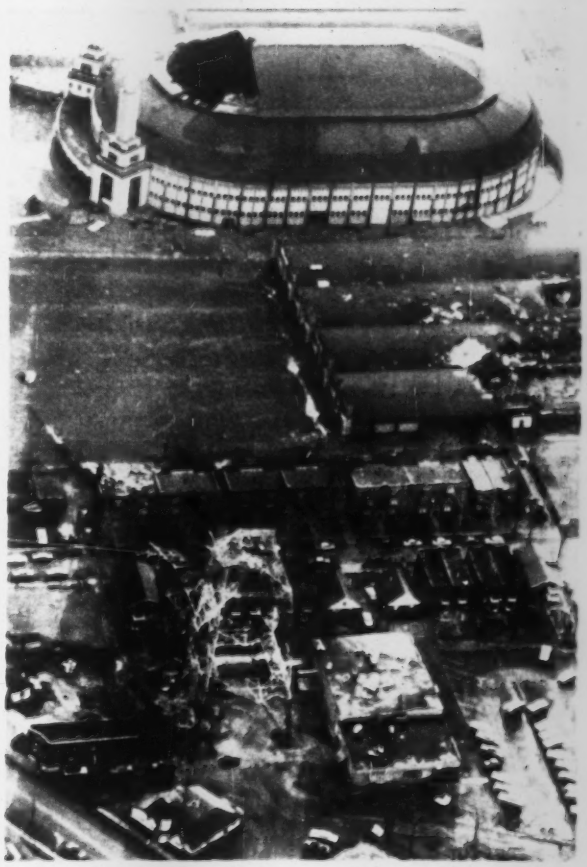
Modern Art in Bridge Design

This highway overpass, recently erected near Wuppertal, Germany, has been dubbed "Picasso Bridge" by nearby residents. Its roadway, built on a grade with different slopes on each side, is supported by an obviously asymmetrical arch.



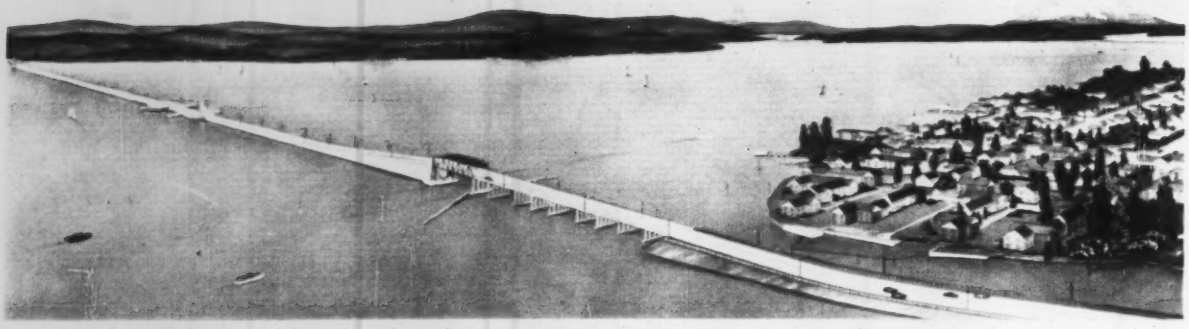
Riding the Rails With Rail

Nine miles of welded steel rail in quarter-mile lengths make up a cargo 75 cars long and weighing 900 tons. The rail will add another 4½ miles of continuous rail to the Great Northern Railway system. It was electrically flash-welded at Fargo, S. D. It's traveling 1,200 miles to Washington State. Great Northern now has 160 miles of continuous rail on its system.

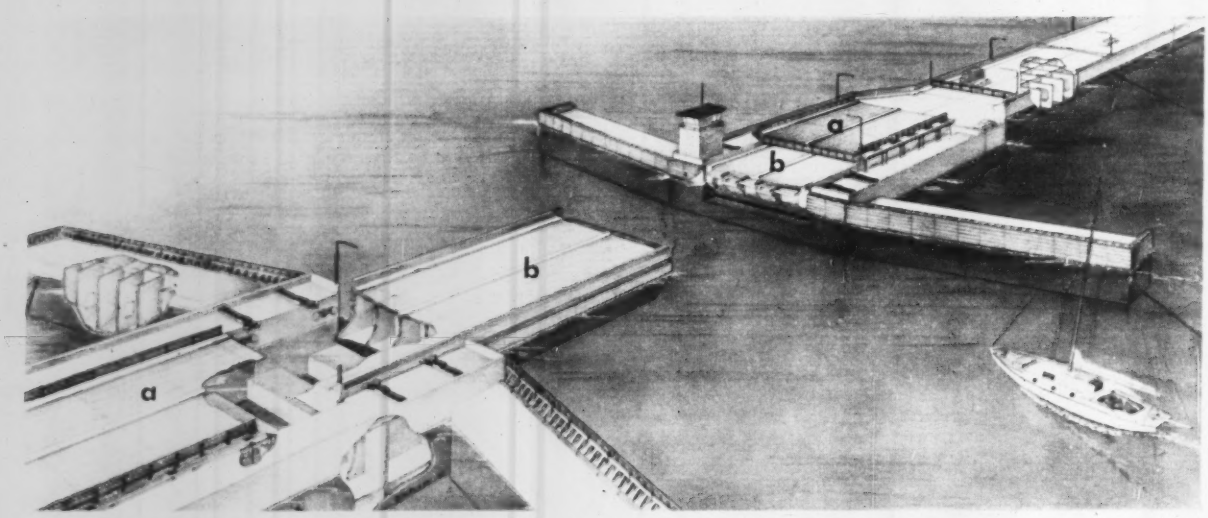


St. Louis Tornado Damages Major Structures

The tornado that struck near the center of St. Louis last week did most of its damage to small houses, but it also mangled a few major structures. The twister ripped a gaping hole in the roof of the St. Louis Arena (top), toppled a 575-ft TV-tower (bottom) and also downed a radio tower. At least 19 persons were killed and 300 were injured.



Steel transition spans will pass small vessels; center drawspan is for large ones.



Drawspan has cantilever decks (a) that raise to allow pontoons (b) to retract.

New Floater for Lake Washington

Bid call went out last week for a second floating bridge across Lake Washington. Bids will be opened in about six weeks, according to Charles E. Andrew, chief consulting engineer for the Washington Toll Bridge Authority.

Contract will be for the floating section of the bridge and is estimated at $16 million. Total project cost is set at $22.7 million.

The new bridge will be east of Seattle and 3.1 miles north of another floating bridge completed in 1940. The lake at this point is 8,600 ft wide and over 190 ft deep for most of the crossing.

The floating section will be 7,519 ft long. Two steel transition spans and fixed approach spans bring total length to 9,374 ft.

• Pontoons retract—The new bridge will be similar to the present one except for the drawspan for passage of large ships.

In the new bridge, two pontoons will retract to provide a 200-ft-clear opening. They will nestle under the steel decks of adjacent pontoons. These decks cantilever out 100 ft and can be raised about 9 ft.

The span is closed by extending the pontoons and lowering the steel decks.

• Thirty-one pontoons—The contract now being offered calls for casting 31 pontoons.

Each will be 360 ft long, 60 ft wide and 14 ft, 9 in. deep, divided into 15x15-ft cells. Bottom slab and outside walls will be 9 in. thick; top slab will be 8 in. thick; and interior walls will be 6 in. thick.

The pontoons will be bolted to each other with one hundred 1¼-in. bolts spaced around the perimeter.

The floating boxes will be fastened to the lake bottom with 58 anchors of three types: boxes sitting on the bottom, anchors jetted into the bottom, and piles.

Anchor lines will be 2¾-in. galvanized steel bridge strands whose free ends attach to adjusting devices inside the pontoons. The lines will tighten or slack off as the lake rises and falls. The maximum change designed for is 4 ft.

• Bridge ends—The transition spans extend shoreward from the ends of the floating structure. They will provide fixed channels for small vessels. One will be 175 ft wide, the other 153 ft.

Approach spans will consist of welded steel girders on concrete piers. The west approach will be 913 ft long, the east approach 489 ft.

The second floating bridge project has been delayed for a number of years by difficulties in locating and financing. The authority ordered final specifications after the Bureau of Public Roads ruled that tolls may be reimposed on the first bridge if necessary to sell a $28.5-million bond issue for the new project.

New SJI 20,000 psi design standards offer added useful strength

in steel joist construction

Architects and engineers now are offered SJI Standards for open web steel joists based upon 20,000 psi working stress. Open web steel joists recommended by the Institute are thus in balance with all other steel used in structures. Greater economy and a more efficient use of steel result.

Another recent development by the SJI has been an increase in the number of recommended Series "S" joists from 17 to 25, to provide greater flexibility and a more exact application of open web steel joists for given structural loads.

The Institute has also published new combined specifications and load tables covering both "L" and "S" Series joists.

Now, more than ever before, you can specify with confidence joists recommended by the Steel Joist Institute, and manufactured in SJI member company plants.

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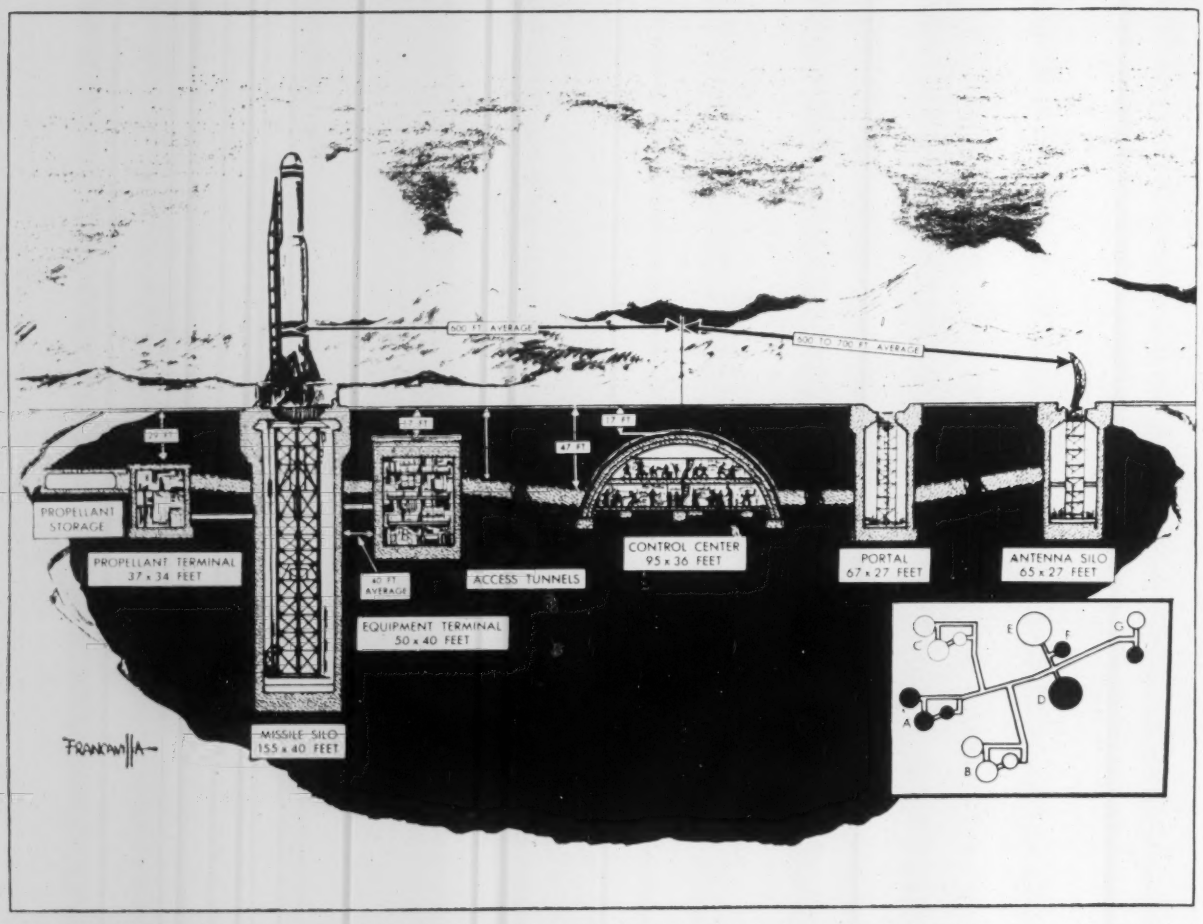


TITAN COMPLEX will have three missile silos with propellant and equipment terminals (A, B, C) linked by tunnels to a control center (D), powerhouse (E), entry portal silo (F) and two antenna silos. (Courtesy of Los Angeles Times)

Concrete Silos to Hold the Titan

Bids will be opened in March for the nation's first underground ballistic missile complexes. Three operational complexes will be built at Lowry Air Force Base, Denver, and a training complex will go in at Vandenberg AFB in California.

The loaded barrels for each complex are three 14-story underground concrete silos. Here the Titan ICBM will wait, ready to be raised to fire at targets as far as 9,000 miles away.

Bids for the Lowry installation are to be opened March 18. Contracts are expected to total $30 million to $40 million for ground facilities and installed equipment.

Bids for Vandenberg are scheduled for opening March 4. Contract is expected to be between $8 million and $10 million.

The operational complexes will each have three giant silos to take the Titan. Each silo will be flanked by an equipment terminal and propellant terminal.

Each complex will also have a control center, a powerhouse, an entry portal silo and two antenna silos. Tunnels will connect all these underground silos.

The Vandenberg training complex will end up with four missile silos. One, being built as a test installation, is now nearing completion.

The 90-ft. Titan will be lowered into the silo and prepared for firing. When shot time comes, fueling will begin. Concrete doors at the top of the shaft will open and elevators will raise the fueled, 110-ton weapon to ground level for firing.

A schedule of bids has been set up so that the field will be open also to firms that aren't "giants." A firm may bid on one, two or three of the complexes. Bids for the powerhouse will be taken separately.

All firms bidding must be eligible to receive facility clearance. Cost of the clearance, if necessary, would be borne by the Air Force.

Government officials won't say how many Titan bases there will be. The best estimate available is eleven. (For detailed story on the Titan and other ICBM bases see ENR Jan. 29, p. 30.)

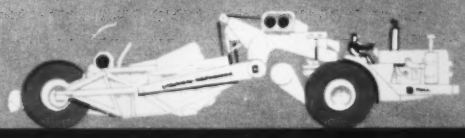
"Buy American" Pushed By Utah Road Commission

Utah's state legislature will be asked to pass a law giving the State Road Commission the right to give preference to U.S.-made goods for new road construction. The legislation would also apply to roads financed by federal aid.

The road commission wants to allow a 5% to 10% bid difference on domestic goods over foreign goods.

About 10 states now give preference to domestic goods (ENR Sept. 18, 1958, p. 187). Texas ordered a ban on all foreign materials in roadbuilding last year, but the U.S. Bureau of Public Roads quashed it. However, BPR has not fixed a policy for all states.

28-yd B Tournapull®



18-yd C Tournapull

9-yd D Tournapull

35-ton capacity B Rear-Dump

22-ton C Rear-Dump

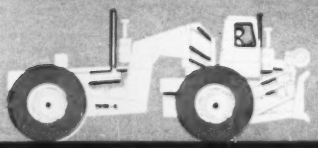
11-ton D Rear-Dump

18-ton Bottom-Dump

10 & 20-ton Side-Dumps

You can make up matched teams for maximum production on any size job from this complete line of LeTourneau-Westinghouse earthmoving machines. See "how" on the following pages:

436-hp Twin-C® Pusher



218-hp Tournatractor®

Drawn Scrapers (11.5, 16, 28 yd)

Sheep's Foot Rollers

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Model 660: 160 hp; 190 hp with torque converter

Model 550: 123 hp; 145 hp with torque converter

Model 440: 115 hp

Model 330: 80 hp

Here's how to match

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Whether you move 200,000 yards a year or 2,000,000, you'll need to move that dirt *faster* and *at less cost* than ever before. And, no matter what size contracts you handle, it will pay you to assemble "matched" teams of greatest efficiency to suit *your* production needs. So look over these improved tools in the LW line and measure their abilities to move today's dirt faster and at lower cost.

In the "super" production ranges, for instance, there is the big B Tournapull with 28-yd Fullpak scraper, the 436-hp Twin C pusher, and the 190-hp 660 POWER *Flow* Adams model grader.

Choose from three sizes of Tournapulls...

First in the field and long "the standard of the industry", now better than ever. Choose from 335-hp, 28-yd capacity B 'Pull*; 226-hp, 18-yd "C"; or the 138-hp, 9-yd "D".

"B" and "C" size scrapers are of the famous fast-loading Fullpak design. Because bowl is low, dirt rolls in almost horizontally, doesn't have to be "lifted" in. Curved tailgate, crowned sidesheets, and deep apron belly keep dirt "boiling" for fewer voids, more solid "pay pack." D 'Pull is only 8' wide, for permit-free road travel *anywhere*.

Standard on *all* 'Pulls is the patented power-transfer differential, which enables scrapers to keep moving in soft going. Another exclusive Tournapull advantage is fingertip electric controls... which give you the simplest and easiest-to-operate control system of all earthmoving machines.

...Each with interchangeable haul units

These same famous Tournapull prime movers also pull and power other trailing units. Most widely used of these is the well-known LW Rear-Dump, available in 11, 22, and 35-ton capacities. With flared top, sloped sides, and low rear entry, loading is fast and easy. Triple-layered, ribbed-steel construction assures long life. Pivot steer allows machine to turn in less than its own length to get you up to and away from shovels and dump areas *quick*. Maintenance costs are lower because no-frame, no-spring, no-mainshaft construction *eliminates* most of the "troublemakers"! These 30 to 35 mph off-road haulers can be purchased separately, to attach to 'Pull prime movers you now own, or as complete combinations.

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Seven sizes, ranging from 60-hp "220" to the big 190-hp POWER-*Flow* 660.

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When LeTourneau-Westinghouse put tractors on rubber tires, it brought *speed* and *mobility* to tractor operations. Result: you can get *more* tractor work done, in *more* locations, with ONE machine, than you can with *two* crawler units. You drive L-W tractors around your project area at speeds to 17.2 mph. You dispatch them like you would trucks . . . anywhere there's work to do.

Every spread needs at least one Tournatractor . . . heavy construction's only *proven* tractor on rubber, with the "bugs" eliminated. This torque-converter-equipped 218-hp unit is available with all standard work attachments, from a dozer blade to a railroad car coupler.

Developed especially for push-loading today's big, fast scrapers is the L-W *Twin-C* tractor, combining 40 tons of work weight, 20 mph speed, and 436 horsepower. Twin engines (kingpin-connected for maneuverability) plus synchronized torque-converter power trains help the Twin-C develop 64,500 lbs of drawbar pull.

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Are you ready? . . .

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According to the Bureau of Public Roads' latest prediction, 1959 will be the first seven-billion-dollar year in roadbuilding history. This means more work for all of us . . . but you can bet your bottom dollar that work will be more and more competitive. In order to squeeze profit out of every job, you should be equipped to work machines properly matched in power, speed, and capacity.

In the LeTourneau-Westinghouse line, you can match scrapers, pushers, dozers, and graders, to step up your yardage. Certainly it is worthwhile to call in your L-W Distributor for a careful analysis of your present equipment. Get his suggestions on how to improve the performance of your fleet by matching a few new and faster L-W earthmoving machines with the better machines in your present line-up. You will find that by trading in your older, slower machines for modern L-W tools, you can *greatly* increase your profit potential.

Trade now . . . while values are still high

Used machines as well as new, are moving out of your equipment distributors' yards at an accelerated pace. There's every reason to believe that equipment demand will equal (and may even exceed) the supply. That's why it is good business to trade now . . . while the market is still "bearish" . . . and dealers are in position to give you better deals. Better make it soon!

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— prompt, dependable, and as near as your phone. Your L-W Distributor is vitally concerned in seeing that your equipment is always in top operating condition, set for maximum production.

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Factory training schools

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And remember, your L-W Distributor is an independent businessman in your area, handling not only LeTourneau-Westinghouse machines, but other well-known and reputable brands of construction equipment. He can serve you in many ways, whether you buy equipment outright, pay for it in monthly installments, or rent. Talk to him soon!

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Teamsters Union Told To Obey Monitors

Federal Judge F. Dickinson Letts clipped Teamster President James R. Hoffa's wings again last week. Under a new court order, union monitors can now compel Mr. Hoffa to comply with their clean-up demands.

Judge Letts' order, which is headed for appeal, is a District Court ruling on a complex series of claims and counterclaims that challenged the legality of the monitor system as well as the power of the monitors. The monitors were appointed by the court last year to supervise and direct the union house cleaning ordered by the court.

The order clothes the monitors with the legal power of command by making them an "arm" of the court rather than mere advisers. This means the monitors can compel union officials to comply with their orders and can subject those who disobey to contempt of court proceedings. The monitors charge teamster officials have been dragging their feet.

Immediate objectives are the institution of record-keeping reforms and the adoption of democratic procedures to protect the rights of rank-and-file members and to assure that the next election of union officers will be free from "boss" control.

The Letts' order follows a Circuit Court of Appeals' dismissal of a collateral attack on the monitor system by John Cunningham, who originally headed the reform group that first challenged Mr. Hoffa's election.

Free Nations Will Spend $8.7 Billion on Highways

The 140 free nations outside the United States will spend $8.7 billion on construction, maintenance and administration of highways this year, according to a forecast by the International Road Federation.

This amount represents a 20% increase over last year's expenditure.

Canada will spend $1.35 billion and West Germany $1.3 billion on highways in 1959. Other large-scale highway programs this year include: France, $750 million; Japan, $500 million; Great Britain, $425 million; Australia, $300 million; Italy, $250 million; Sweden, $175 million; Brazil, $250 million; and Venezuela, $250 million.

India will spend about $175 million this year as part of its 20-year, $9.4-billion highway program. The Dominican Republic is planning a $1.8-billion, five-year road program. And a new six-year plan for highways in Portugal will cost more than $1 billion. Argentina will need to spend over $2.5 billion over the next 15 years to modernize its highway system.

Military Construction Pinpointed

Upcoming military construction contracts totaling $1.36 billion are spelled out in the Defense Department authorization request now before Congress.

Most of the new military work on which bids will be invited during fiscal 1960 is covered by the $1.3 billion of new authority. Not included in this total is $200 million of new contracts for the fiscal year starting July 1.

A money request for the $200 million, to finance military projects previously authorized, will go to the appropriations committees of the House and Senate within the next few days. Budgeted total for the money bill is $1.56 billion.

The authorization request includes 328 new projects in the U.S., Hawaii, the Caribbean area, Europe, the Pacific islands, Bermuda, Canada and Japan. Over $1 billion would go for work in the U.S., $275 million overseas, and $52.5 million for locations that have not been specified.

Request also includes authority to build 21,701 units of family housing for military personnel. Of the total, 18,546 would be built on military reservations in the U.S. and its possessions.

Here is a list of U.S. projects of $3 million and over:

Alabama—Redstone Arsenal, Fort Rucker, $5,387,000.

Arizona—Fort Huachuca, $3,699,000; Marine Corps Auxiliary Air Station, Yuma, $3,940,000.

California—Naval Air Station, Lemoore, $26,897,000; Pacific Missile Range, Point Mugu, $30,050,000; March AFB, Riverside, $6,165,000.

Colorado—Colorado Springs Area, $10,000,000.

Connecticuit—Naval Submarine Base, New London, $3,146,000.

Florida—Homestead AFB, Homestead, $6,364,000; McCoy AFB, Orlando, $8,402,000; Tyndall AFB, Panama City, $4,266,000.

Illinois—Naval Training Center, Great Lakes, $4,712,000.

Kansas—Schilling AFB, Salina, $4,147,000.

Maine—Naval Radio Station, Washington County, $3,179,000.

Maryland—Andrews AFB, Camp Springs, $21,810,000.

Massachusetts—Laurence C. Hanscom Field, Bedford, $3,125,000.

Minnesota—Bethel Air National Guard Base, Bethel, $4,963,000.

Mississippi—Naval Auxiliary Air Station, Meridian, $5,576,000.

Montana—Glasgow AFB, Glasgow, $3,711,000.

New Hampshire—Naval Shipyard, Portsmouth, $3,417,000.

New York—United States Military Academy, $6,417,000.

North Carolina—Seymour-Johnson AFB, Goldsboro, $3,150,000.

North Dakota—Minot AFB, Minot, $3,419,000.

Ohio—Wright-Patterson AFB, Dayton, $12,528,000.

Oklahoma—Fort Sill, $5,337,000.

Rhode Island—Naval Station, Newport, $7,353,000.

Tennessee—Arnold Engineering Development Center, Tullahoma, $5,690,000; Stewart AFB, Smyrna, $3,249,000.

Texas—Fort Bliss, $8,049,000; Sheppard AFB, Wichita Falls, $7,741,000.

Virginia—Fort Eustis, $4,366,000.

West Virginia—Naval Radio Research Station, Sugar Grove, $3,957,000.

Wisconsin—Richard Bong AFB, Kansasville, $21,533,000.

Construction Jobs Decline From Last Year's Level

Unemployment climbed last month to the highest January level in 18 years.

By mid-month, 4.7 million workers were jobless—600,000 more than a month ago. Only 2.5 million of these were covered by unemployment insurance. Employment in contract construction was down by 147,000 to 2.3 million, which is a drop of 56,000 from a year ago.

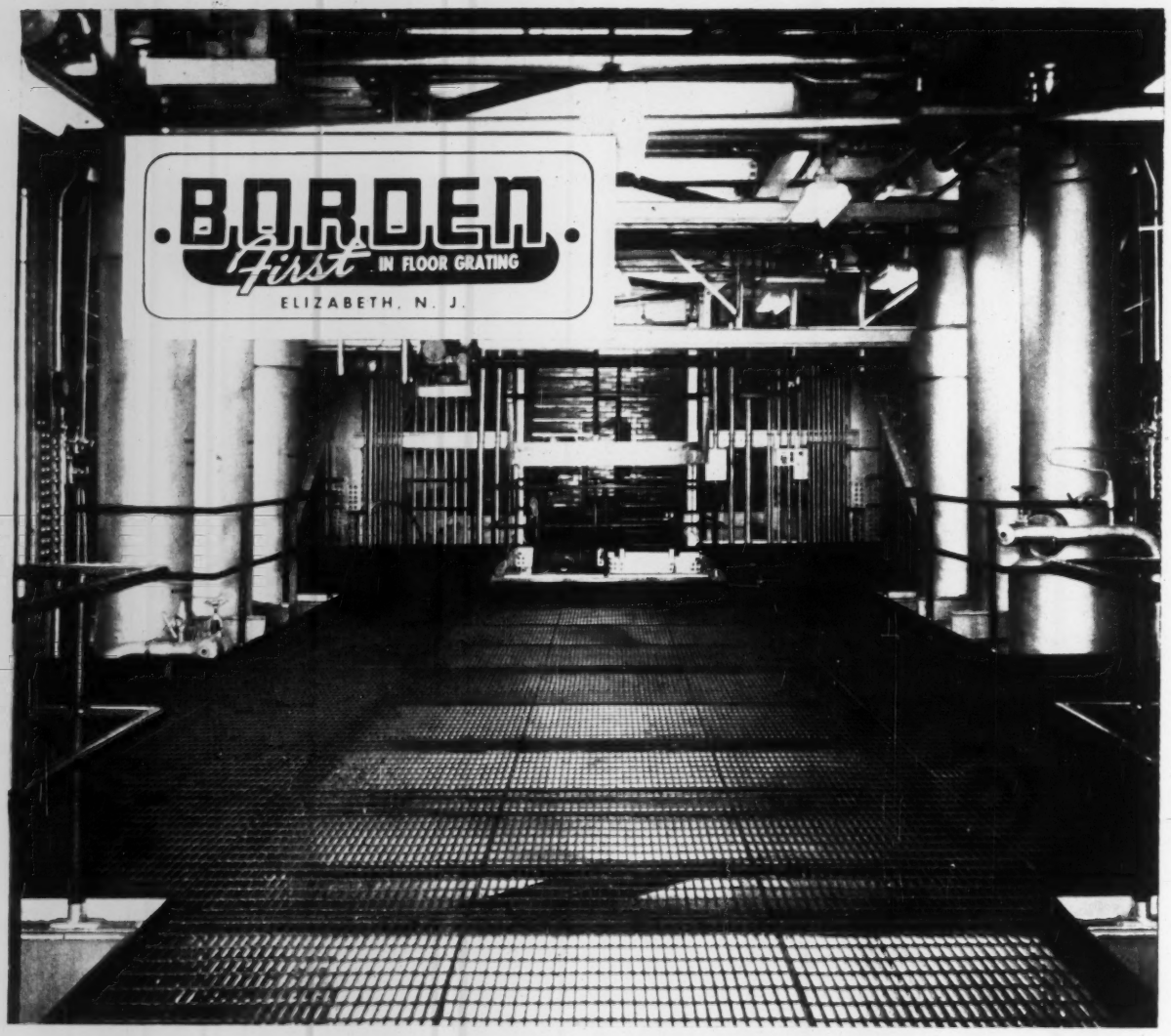
Labor Secretary James Mitchell and Commerce Secretary Lewis Strauss, who jointly announced the January figures, attributed the employment decline to "cutbacks in seasonal activities" but admitted that re-employment is "slow" and still lagging behind economic recovery.

The January figures have been cited by the AFL-CIO as clear indication that "joblessness is America's No. 1 problem."

The length of the factory workweek dropped down to 39.9 hours, overtime work fell off and weekly earnings of factory workers declined by 88 cents to $87.38 during the month. Hourly earnings, however, remained steady at $2.19.

Employment in manufacturing and in the food processing and lumber industries was down, but the electronic, generating equipment and other machinery industries showed slight gains. Steel and auto employment remained steady.

Insured unemployment was on the increase everywhere, with California, New York and Pennsylvania the hardest hit. The number of persons exhausting their regular state benefits rose from 213,000 in December to 225,000 in January. Long-term unemployment—idleness of 15 weeks or longer—remained unchanged, instead of continuing the decline that began last summer.



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The Challenges Ahead

- **To avoid inflation through better cost management**
- **To broaden thinking to master the big problems**

The two major challenges for 1959—better cost management and bigger thinking—are directly concerned with the healthy growth of your business, the construction industry and the nation's economy.

For 1959, growth in the number of dollars to be spent on construction is not in question. All authorities seem to agree that, by this measure, construction will increase.

Actual growth in the physical volume of construction is not as likely. Increases in the cost of labor, equipment, materials and money can eat up the extra dollars. That is inflation, and the challenge is to avoid it by an increase in productivity.

For the construction industry the principal road to increased productivity is through improved technology focused on lower costs, with special emphasis on labor costs. Improved technology, we had in 1958—and many conspicuous examples will be found in the reports on the following pages.

We built the highest and largest earthfill dams in the world, skyscrapers with the thinnest walls ever tried, runways to carry the biggest and fastest planes ever built.

We fabricated the heaviest steel columns on record, used electronic aids to revolutionize surveying, made roofs of folded steel plates and thin concrete shell, and bridge girders of bent aluminum sheets. And, as proof of the scope and versatility of our technology, we applied our talents to such new fields as missile bases and atomic power plants.

Much of this technological endeavor, but not all, had cost-reduction as an objective.

Now the danger of inflation is so great that lower cost and increased productivity should be the goal of every technological improvement undertaken in the year ahead. To do less will be abdication to the basic challenge that growth in construction poses.

It is largely because this challenge of inflation has not been met effectively in the years since the war that such big problems as those of transportation, urban renewal and water resources have become so much bigger—so big that thinking about their solution has been all but avoided.

That is the second challenge of growth that emerges in bold relief in 1959.

Broader thinking is definitely required if these great, all-inclusive problems are to be solved.

The expansion possibilities for construction in the year ahead are large and encouraging. This annual report and forecast is dedicated to pointing out where the technical and business advances in the various specialties and categories of construction are now likely to occur. But these actual advances will far outstrip anything that is set down here if the challenges of better cost management and truly broad-gage thinking are met and mastered.

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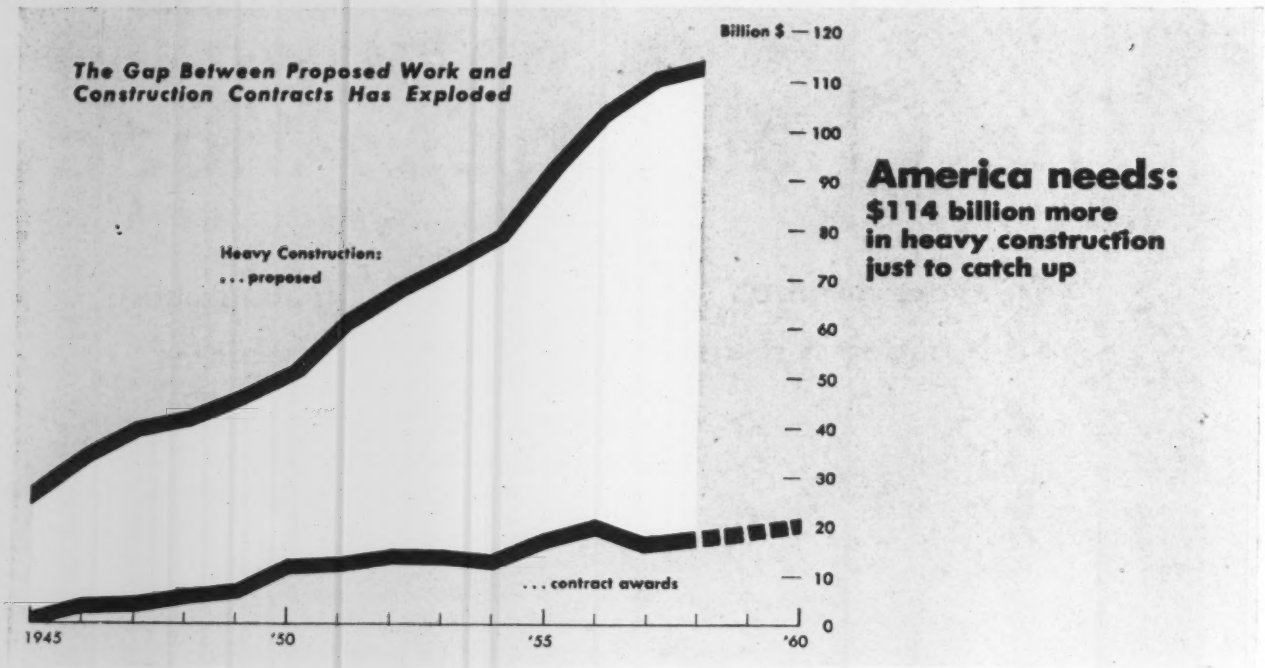
America's Expansion Needs Call



The Market Will Double by 1975

America's output is rising again. The upswing marks the renewal of economic growth that should more than double our economy's total output by 1975.

Construction will pilot this future growth, just as it led the economy out of three recessions and guided the post-war boom. The economy can move only as fast as construction will pace it.

What's more, construction will grow faster than the economy as a whole. This means a challenging era for construction men.

• **Forecast for the economy**—By 1975 our Gross National Product should reach $1,150 billion. That figure represents prices swollen by cumulative inflation. ENR predicts prices will rise an average of 1½% a year.

In today's prices, the 1975 GNP would be $855 billion. That's nearly double the $487 billion '58 estimate.

This rapid growth in total output requires solutions to some major problems: How to best utilize new resources and existing resources, expand production facilities, and improve distribution facilities.

• **Enter construction**—Solutions to the problems of our economy will require billions of dollars for the construction that must precede higher output and improved distribution. That's one reason why construction's growth must rise faster than the total economy. Another reason: Outmoded public and private plant must be modernized.

All this means annual construction volume will more than double by 1975, measured in constant 1958 dollars. You can get a picture of what this means by these 1975 forecasts (in '58 dollars):

• Heavy construction contracts will total $40 billion, up 109% over 1958.

• New construction put in place will rise 106% to $101 billion.

These projections anticipate annual growth rates of 4.4% for heavy construction contracts and 4.3% for new construction put in place—compared to 4.1% for Gross National Product.

Rising construction costs will bring the actual dollar totals even higher. ENR forecasts that costs will move up an average of 2½% a year from 1959 to 1975 (much less than the 6.5% rate from 1946 to 1958). With inflation, heavy construction contracts should hit $58 billion by 1975, while new construction put in place will hit $149 billion.

• **First job: Catch up**—The job now is to catch up with the huge volume of work planned. ENR's backlog shows this is a record $114.4 billion.

The chart above shows how the backlog has exploded despite the rise in contract awards. It would take six years at the 1958 rate to award all projects in this backlog.

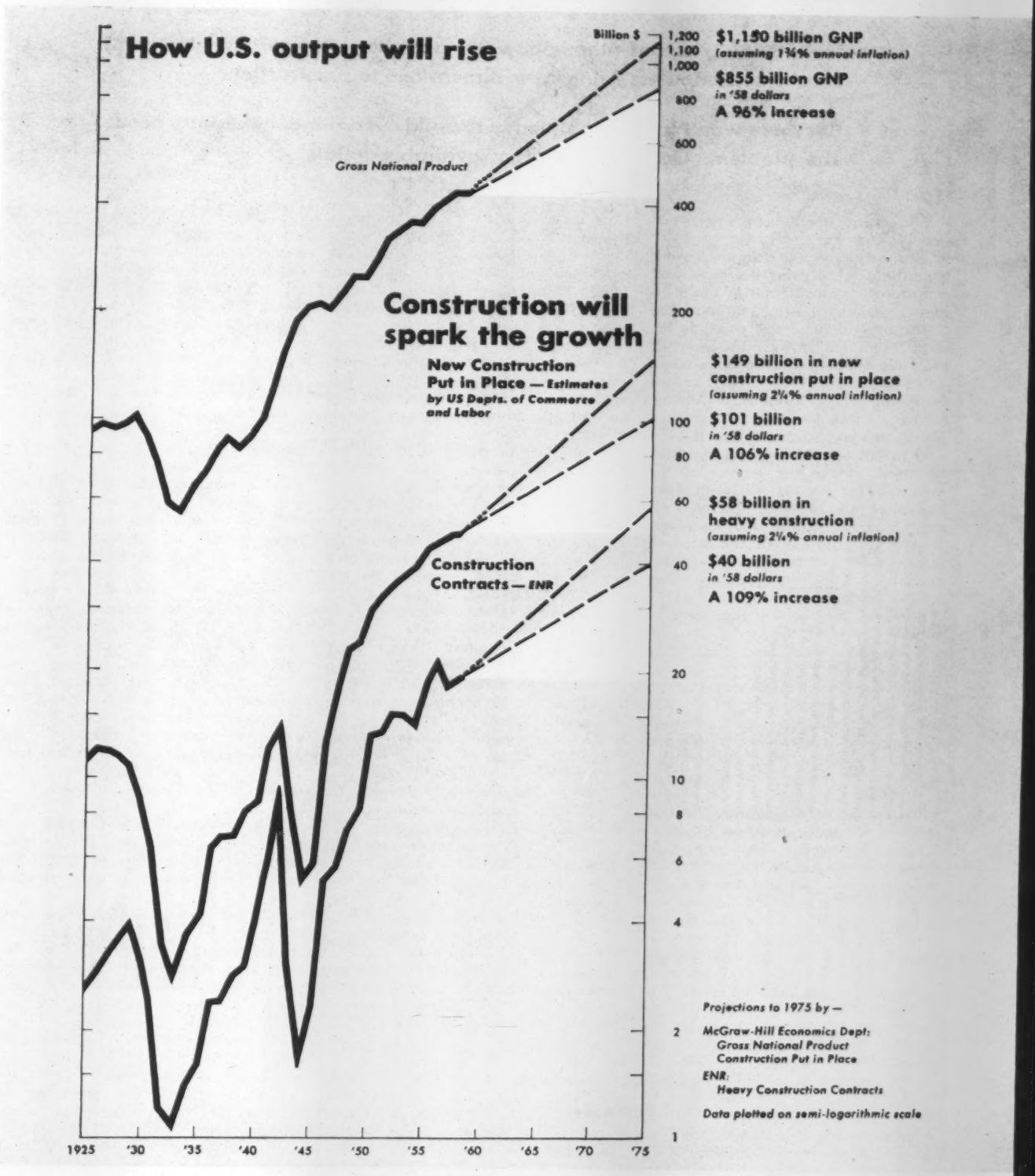
The current backlog is just part of the long-range picture. Even while the construction industry takes on these jobs, other projects will flow in.

The growing construction needs of an expanding America will obviously lift future contracts far above the previous record volume—less than $22 billion in 1956. Even $40 billion by 1975 is a modest goal—too modest, in fact, to create a fully modernized, efficient America.

• **The key**—Construction's growth will be limited, as always, by the financing available. If construction is to attract the funds, constructors must avoid pricing themselves out of the market.

Construction men must become more skillful managers, master improved techniques, come up with better and more economical designs. And perhaps they should do a better job of telling the public how construction can contribute to faster development of America's economic potential.

for Rapid Construction Growth



New Demands for Construction

- **The dawning age of atomic power, space exploration, jet travel and electronic computers bring new dimensions to construction.**
- **But there won't be enough money to build everything the country needs. The problem: Getting more from available dollars.**

The construction industry's new business trend is up.

This is true for the volume of work going onto the drawing boards as well as for projects moving out of the planning stage into construction contracts.

The upward trend will continue because needs are growing for more of the basic types of construction: roads, water resource development, sewage treatment, flood control, housing, schools, office buildings, industrial plants and airports.

Demands for new types of construction will add to the growth of the market. This demand will come from customers who produce the products created by the nuclear and space age. It will also come from the need to replace inefficient facilities with plants designed to cut costs of the goods or services produced.

Some of this construction may be radically different. Scientific advances will bring new shapes and character to construction.

How fast construction's market grows depends on several factors. The problems are not particularly new, but their solutions are vital to the construction industry's growth in 1959 and the years ahead.

• Stretch the dollar—The most critical problem facing construction buyers is getting the money. There won't be enough to pay for all the projects our country needs. So it boils down to getting the most concrete and steel out of the construction dollars available.

Although public works planning has been improving, more of it is needed—and on a broader scale. This planning must set up an order of priority to make sure the most important jobs get done first, and it must consider the needs of the whole community. Better planning, if it's forthcoming, will help stretch construction dollars available from tax revenues.

• Help yourself—The construction industry has a heavy responsibility in determining the pace of its market growth. Our industry can help ease the pinch on available funds by raising productivity, reducing costs. This means using the most economical materials, equipment and methods. It requires a big investment in construction equipment. It also means more education of engineering and architect staffs and of contractor work forces.

Materials and equipment manufacturers and suppliers must provide more efficient products to help engineers and contractors market a better product at an economic construction cost. Manufacturers and suppliers may have to step up their programs to inform the construction industry and potential construction customers on what's new.

Labor can speed or brake the rest of the construction industry's effort to expand the market. This depends on labor's ability to end wasteful practices on the job. It also depends on the approach labor takes toward higher wages.

• Private work rebounds—Private heavy construction is more brisk than public. While volume is currently far below its record pace in 1956, this category is on the comeback trail.

The brightest spot in the private market is the makings of a record boom in commercial building, mainly office construction. Plans have been piling up for about three years, yet contracts have barely reflected this.

The 1957-58 recession depressed the trend in commercial building awards only a little. Now that the economic clouds are broken, commercial building awards should start to climb. Volume of proposed commercial building projects during 1958 topped 1957 by 17% and were 7% more than 1956's previous high. Contracts are forecast to top 1958 by 14% and 1960 volume is expected to show a 23% jump over this year (see page 50).

Industrial building contracts are expected to rise this year after a slump that lasted more than two years (ENR Jan. 15, p. 21). The upturn in proposed work in the fourth quarter of 1958 started the rise.

Mass housing contracts should get back on the growth track by the second half of this year. But interest rate ceilings are likely to remain on government-insured mortgage. This makes growth of that segment of the market vulnerable to shifts in interest rates.

Nuclear construction has yet to break through the barriers of economics and technology. But the solution of engineering problems facing economic nuclear power, nuclear fuel purification and waste disposal should clear the way for a lot of expansion in the 1960s.

Last year, private nuclear construction awards hit $47 million, less than half the 1955 record.

• Public booming—This will be the biggest year yet for public works construction awards and 1960 could be even bigger—unless the growing financial problems in many states put a crimp in it.

The expected growth of the economy will help ease the financial pains by increasing tax revenues. And higher taxes will add to the take of big and little governments.

The real need, however, is a basic decision to promote faster growth in the public works market. Progress is being held up by the problem of fixing responsibility among local communities, the states and the federal government. This decision is up to the voters.

• More business, more firms—As the construction market rises in the years ahead, more firms will be needed to handle the bigger design and construction load.

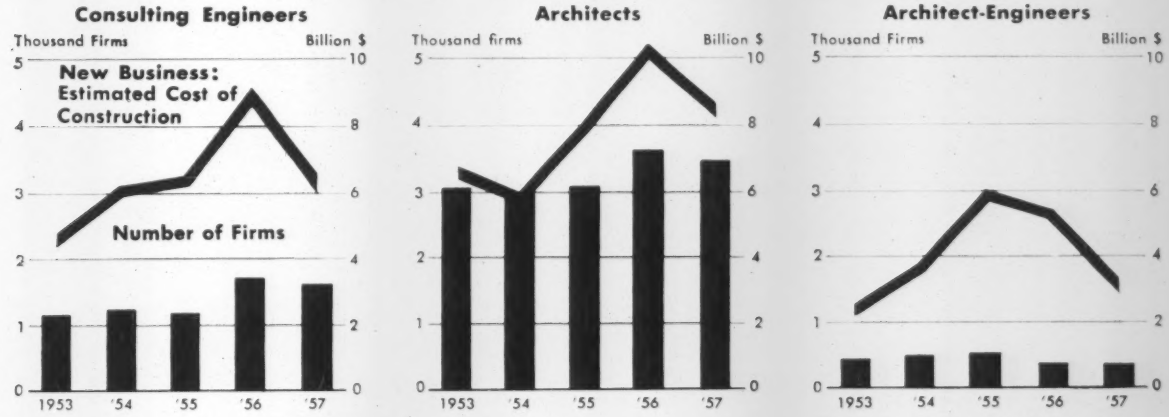
The industry is operating far below capacity now, especially the engineering and architect firms. While the volume of new proposed work is rising, there's a great deal of slack to be taken up before design offices are back to their 1956 rate of operations.

Contractors also have much more capacity than the volume of new work available. However, their number increases more rapidly for a given amount of work than do engineering and architectural firms.

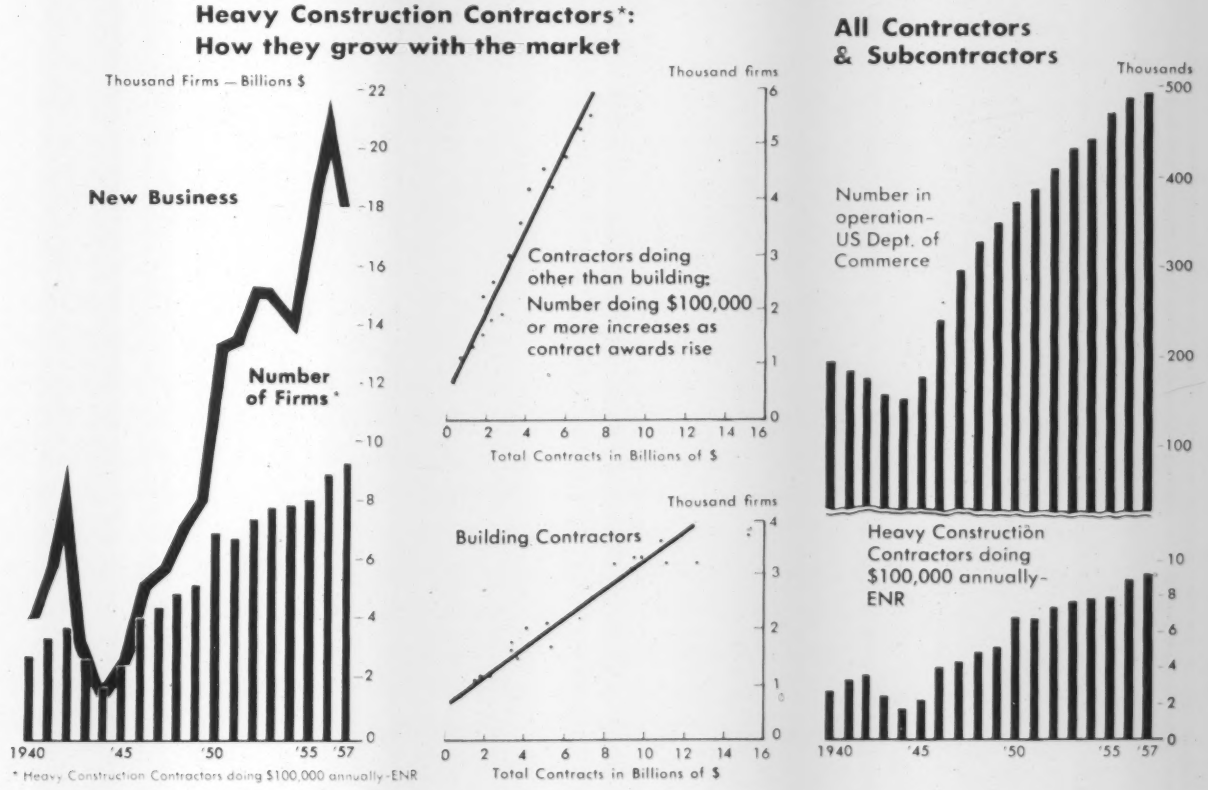
Contractor growth has been most spectacular for those firms handling heavy construction other than building during the past few years. Between

Are Creating a Broader Market

As curves turn up, we'll need more designers . . .



. . . and many more construction contractors


Heavy Construction Contractors*: How they grow with the market
Thousand Firms — Billions $
New Business
Number of Firms*
1940
'45
'50
'55
'57
* Heavy Construction Contractors doing $100,000 annually-ENR
Thousand firms
Contractors doing other than building: Number doing $100,000 or more increases as contract awards rise
Total Contracts in Billions of $
Building Contractors
Total Contracts in Billions of $
All Contractors & Subcontractors
Thousands
Number in operation-US Dept. of Commerce
Heavy Construction Contractors doing $100,000 annually-ENR

1953 and 1957, the number of contractors doing $100,000 or more annually in heavy construction rose 31% to 5,628. This compares with a 3% rise in construction contracts. The number of contractors increases by about 750 with each $1 billion in additional contracts per year (see chart).

Building contractors expand less rapidly into the $100,000-and-up bracket as building awards rise. The chart above shows how their number increases by about 215 for each additional $1 billion in annual volume available. But the 1953-57 increase of 8% in their number was close to the 10% rise in new business.

The number of consulting engineer and architect firms has changed much more moderately with the volume of new business available (see charts). Consultants taking on projects with a total estimated construction cost of $100,000 or more increased by 42% but new business jumped 96%. There were only 16% more architects in that bracket; work climbed 53%.

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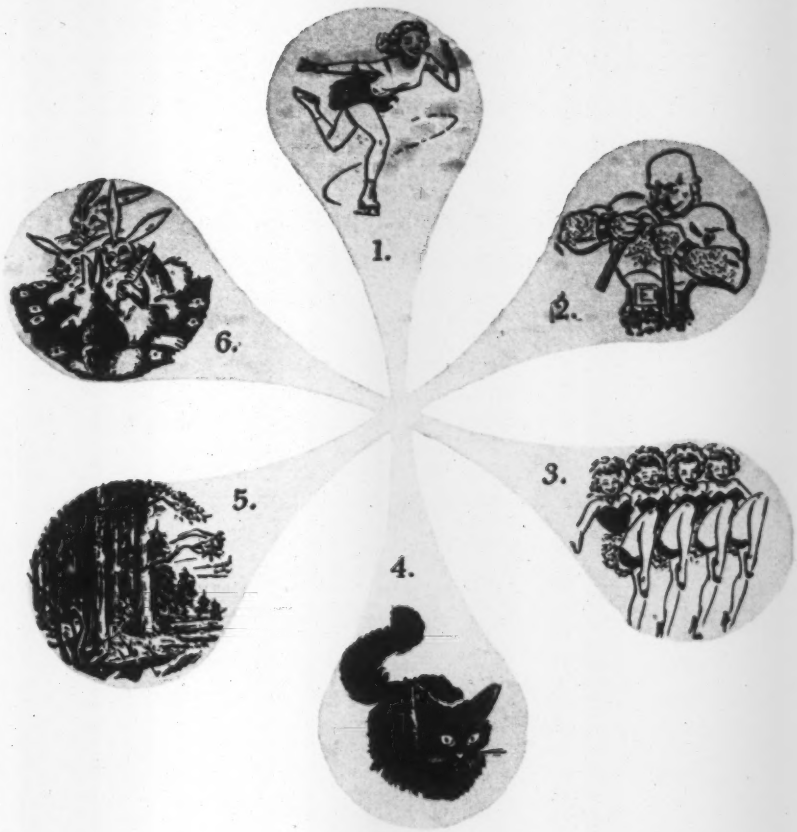
Heavy Construction Contracts

Contractors Have Second Biggest Year in 1958

Thousands of Dollars (000 omitted)

States	Public Works Contracts: Water-works	Sewer-age	Bridges*	Earth-work irr.-drain	Buildings: Streets and roads	Resi-dential	Other	Unclassi-fied†	Federal govern-ment work	Private Contracts: Commercial Buildings: Industrial buildings	Resi-dential	Other	Construction: Private	Public	1958 Total	1957 Total	% Change '57-'58
UNITED STATES																	
1958	**306,256**	**617,830**	**713,422**	**1,044,648**	**3,729,217**	**1,054,904**	**2,609,571**	**1,798,511**	**2,826,041**	**1,755,973**	**3,739,213**	**1,795,089**	**7,730,182**	**11,434,452**	**19,164,634**		**+7**
1957	369,027	556,038	781,413	969,393	2,964,563	641,812	2,352,732	1,474,502	2,184,898	3,081,018	3,038,703	1,756,644	8,385,553	9,600,292		17,985,845	
% Change	−17	+11	−9	+8	+26	+64	+11	+22	+29	−43	+23	+2	−8	+19	+7		
NEW ENGLAND																	
Me.	3,551	1,466	7,141	190	29,264	16,531	5,088	42,203	56,952	1,827	3,600	9,100	14,602	105,359	**119,961**	49,663	+142
N.H.	144	1,608	1,442	27	24,333	2,883	4,842	4,062	3,399	26,261	2,560	5,518	35,004	38,676	**73,680**	49,087	+50
Vt.	47	652	175	10,824	19,311	555	1,707	5,696	16,514	925		6,168	7,093	38,967	**46,060**	30,666	+50
Mass.	7,718	21,206	918	17,689	88,137	38,245	80,566	47,840	72,462	86,346	82,072	65,460	236,864	299,373	**536,237**	479,874	+12
R.I.	365	939	1,102	1,543	14,931	902	9,330	10,826	8,771	1,827	3,651	8,498	14,656	39,258	**53,914**	82,506	−35
Conn.	2,307	10,333	12,078	9,038	38,982	7,323	62,140	14,797	18,587	35,601	221,711	44,631	307,257	151,679	**458,936**	499,467	−8
1958	**14,132**	**36,204**	**22,851**	**39,311**	**214,958**	**66,479**	**163,673**	**125,424**	**176,685**	**152,787**	**313,594**	**139,375**	**615,476**	**673,312**	**1,288,788**		**+8**
1957	8,396	22,109	45,662	37,427	164,982	35,046	174,041	75,054	123,547	235,465	223,148	169,933	639,158	552,105		1,191,263	
% Change	+68	+64	−50	+5	+30	+90	−6	+67	+43	−35	+41	−8	−4	+22	+8		
MIDDLE ATLANTIC																	
N. Y.	12,452	63,879	63,835	373,841	299,217	153,773	260,935	139,517	140,394	55,404	337,637	353,730	777,003	1,337,217	**2,114,220**	1,921,941	+10
N. J.	3,929	27,090	28,096	8,985	52,574	41,841	54,457	39,688	51,209	127,248	743,586	84,592	968,129	246,957	**1,215,086**	815,399	+49
Pa.	11,304	41,180	34,281	24,199	200,447	26,458	126,598	66,467	38,730	65,587	252,740	61,032	424,463	485,730	**910,193**	985,115	−8
Md.	11,982	13,054	15,797	941	48,182	9,355	60,413	14,925	38,534	40,987	38,739	26,504	107,286	173,593	**280,879**	372,649	−25
D.C.	1,025	5,750	2,489		15,924	14,526	42,643	4,155	37,930	2,603	28,095	36,237	67,020	86,427	**153,447**	125,130	+23
Del.	289	187	2,082	514	12,526	13,615	20,373	4,989	13,328	2,081	36,272	9,800	48,549	54,179	**102,728**	120,095	−14
1958	**40,981**	**151,140**	**146,580**	**408,480**	**628,870**	**262,468**	**565,419**	**269,741**	**320,125**	**293,910**	**1,437,069**	**571,895**	**2,392,450**	**2,384,103**	**4,776,553**		**+10**
1957	77,107	106,017	194,337	119,861	531,099	161,518	563,566	199,609	299,981	457,729	1,342,968	586,518	2,395,908	1,944,421		4,340,329	
% Change	−47	+43	−25	+241	+18	+63	+0.3	+35	+7	−36	+7	−3	−0.1	+23	+10		
SOUTH																	
Va.	1,821	1,869	13,888	2,485	50,158	29,269	37,765	26,494	81,389	34,064	14,209	24,799	73,072	163,749	**236,821**	206,139	+15
W. Va.		5,238	3,376	8,740	40,234	2,012	61,774	713	70,740	10,362	1,166	14,800	26,417	121,998	**148,415**	66,088	+125
N. C.	4,553	6,970	8,220	1,130	62,995	24,972	24,426	36,225	52,691	18,900	2,787	7,081	31,803	166,356	**198,159**	143,458	+38
S. C.	5,591	1,908	13,807	3,512	61,947	18,290	13,673	28,828	43,163	3,222	5,637	4,080	13,189	147,296	**160,485**	139,075	+15
Ga.	1,525	6,533	3,733	4,312	95,962	18,445	30,190	46,706	42,444	8,884	6,683	19,745	48,388	194,330	**242,718**	176,857	+37
Fla.	10,975	15,114	30,966	15,879	90,559	28,794	54,904	75,935	100,542	15,324	84,843	28,086	133,938	317,441	**451,379**	529,158	−15
Ala.	4,996	11,146	6,803	15,688	47,226	21,043	31,495	44,092	52,527	87,580	46,077	12,272	177,914	150,504	**328,418**	222,514	+48
Miss.	3,461	4,940	7,176	4,053	36,716	9,426	29,092	19,063	22,179	10,383	413	3,991	19,332	109,382	**128,714**	82,029	+57
La.	10,061	9,699	11,326	25,319	96,222	15,963	51,164	37,914	39,001	73,460	15,440	17,026	119,115	244,559	**363,674**	353,946	+3
Ky.	2,578	9,081	4,364	14,856	101,818	19,381	18,022	4,832	68,854	28,583	17,290	13,223	59,537	204,491	**264,028**	200,770	+32
Tenn.	3,650	2,422	12,180	16,420	78,768	7,302	38,316	16,818	47,687	10,958	6,072	17,219	36,612	173,513	**210,125**	138,249	+52
1958	**49,211**	**74,920**	**115,889**	**142,424**	**762,595**	**194,897**	**390,721**	**337,620**	**621,217**	**301,720**	**200,617**	**162,322**	**739,317**	**1,993,619**	**2,732,936**		**+21**
1957	29,170	47,148	94,752	88,521	499,682	216,048	331,408	206,164	471,594	429,012	218,602	98,176	776,041	1,482,642		2,258,683	
% Change	+69	+59	+22	+61	+53	−10	+18	+64	+32	−30	−8	+65	−5	+34	+21		
MIDDLE WEST																	
Ohio	13,008	48,014	22,743	8,982	310,399	23,720	106,322	96,994	81,444	61,705	360,295	134,190	593,019	593,953	**1,186,972**	1,276,409	−7
Ind.	3,182	28,412	24,407	9,742	81,953	1,351	39,279	18,013	19,942	46,533	51,680	30,278	136,118	202,012	**338,130**	398,111	−15
Ill.	20,413	36,120	94,576	12,614	172,576	28,194	124,531	68,499	84,553	110,555	251,812	124,746	509,240	535,396	**1,044,636**	1,155,958	−10
Wis.	6,973	17,487	18,498	836	83,320	7,974	44,057	33,865	27,933	35,670	4,919	36,341	81,735	208,205	**289,940**	274,982	+5
Mich.	4,749	23,233	12,183	11,237	133,333	19,248	107,739	69,092	79,011	109,965	65,396	41,842	221,203	376,814	**598,017**	827,240	−28
1958	**49,225**	**153,266**	**172,407**	**43,411**	**784,581**	**80,487**	**421,928**	**286,463**	**292,883**	**364,428**	**734,102**	**367,397**	**1,541,315**	**1,916,380**	**3,457,695**		**−12**
1957	83,720	176,391	209,803	46,376	688,033	51,134	399,883	153,174	107,003	1,054,648	694,265	375,273	2,212,801	1,719,899		3,932,700	
% Change	−41	−13	−18	−6	+14	+57	+6	+87	+174	−65	+6	−2	−30	+11	−12		
WEST OF MISSISSIPPI																	
Minn.	7,683	19,115	11,855	1,589	85,776	19,310	74,273	51,563	32,348	20,030	12,233	43,180	87,795	258,812	**346,607**	277,800	+25
Iowa	6,428	6,695	24,299	4,792	88,109	3,738	30,086	7,329	26,867	13,341	2,182	17,719	38,816	165,902	**204,718**	224,470	−9
Mo.	3,586	10,605	32,934	17,680	64,619	45,562	58,674	21,231	66,682	77,492	73,781	40,341	197,369	249,136	**446,505**	375,401	+19
Ark.	1,250	4,259	7,284	9,411	25,716	3,978	10,579	14,743	21,213	67,704	26,001	7,100	104,441	73,584	**178,025**	109,450	+63
N. D.		201	5,603	6,048	32,785	27,079	2,409	17,598	48,385	363		509	3,689	88,906	**92,595**	102,506	−10
S. D.	1,060		6,605	58,381	24,335	810	4,682	7,851	71,204	585		2,177	3,204	103,282	**106,486**	81,385	+31
Neb.	474	4,148	11,561	3,352	33,173	15,970	22,881	10,860	29,052	1,325		14,386	16,357	101,773	**118,130**	122,919	−4
Kan.	2,068	14,497	15,805	18,062	61,931	10,071	17,338	11,036	45,990	34,382	1,943	7,700	44,681	153,152	**197,833**	197,646	0
Okla.	1,519	2,813	28,734	21,475	55,313	21,995	36,452	36,486	91,465	18,755	1,508	24,490	55,103	197,487	**252,590**	220,638	+14
Tex.	35,802	42,095	17,515	25,671	258,096	70,434	124,946	168,042	151,250	132,053	403,665	115,295	751,552	642,092	**1,393,644**	1,325,965	+5
Mont.	2,271		8,046	15,337	35,206	4,146	5,641	33,265	48,791	3,050		1,495	7,232	101,225	**108,457**	72,060	+51
Wyo.	233	529	6,386	2,020	25,578		7,751	24,415	22,979	9,750		1,941	17,476	61,157	**78,633**	72,121	+9
Colo.	3,636	4,502	4,267	14,739	46,060	19,945	39,491	15,052	49,589	6,051	77,112	23,648	107,903	148,600	**256,503**	195,461	+31
N. M.		464	1,360	12,535	36,953	23,625	33,037	22,446	83,528	6,000	402	4,017	12,797	128,042	**140,839**	92,749	+52
1958	**71,040**	**109,923**	**182,304**	**211,092**	**876,650**	**266,663**	**468,240**	**441,947**	**789,343**	**390,881**	**598,827**	**303,998**	**1,448,415**	**2,473,150**	**3,921,565**		**+13**
1957	86,735	86,297	160,294	180,572	713,200	118,363	405,274	468,438	518,119	597,355	315,702	338,241	1,452,742	2,017,829		3,470,571	
% Change	−18	+27	+14	+17	+23	+125	+16	−6	+52	−35	+90	−10	−0.3	+23	+13		
FAR WEST																	
Idaho	406	4,490	2,844	2,316	27,446	4,307	18,961	10,198	35,160	568		1,948	3,211	70,273	**73,484**	59,416	+24
Utah	8,361	3,239	3,613	32,968	24,220	1,043	28,420	15,931	51,890	34,007	4,708	4,731	50,892	110,349	**161,241**	104,301	+55
Ariz.	944	854	1,051	16,775	33,717	16,107	4,207	17,048	51,369	52,000	32,250	16,337	101,587	89,703	**191,290**	195,536	−2
Nev.					19,365	4,340	8,477	8,569	12,136	3,000		1,241	4,241	40,751	**44,992**	54,093	−17
Wash.	5,696	14,521	17,375	45,132	55,124	31,680	69,161	37,718	109,737	49,871	23,969	32,919	108,680	274,486	**383,166**	482,038	−21
Ore.	4,515	5,239	17,002	14,966	61,759	11,184	25,247	14,355	40,704	10,436	12,002	27,310	50,858	153,157	**204,015**	175,996	+16
Calif.	61,745	64,034	31,506	87,273	239,932	115,249	445,117	233,497	324,792	102,365	382,075	165,616	673,740	1,255,169	**1,928,909**	1,720,919	+12
1958	**81,667**	**92,377**	**73,391**	**199,930**	**461,563**	**183,910**	**599,590**	**337,316**	**625,788**	**252,247**	**455,004**	**250,102**	**993,209**	**1,993,888**	**2,987,097**		**+7**
1957	83,899	118,076	76,565	496,636	367,567	59,603	478,560	372,063	664,654	306,809	244,018	188,503	908,903	1,883,396		2,792,299	
% Change	−3	−22	−4	−60	+26	+209	+25	−9	−6	−18	+86	+33	+9	+6	+7		
CANADA																	
1958	**27,177**	**52,632**	**57,340**	**28,274**	**154,614**	**62,730**	**218,505**	**176,321**	**211,017**	**260,618**	**245,778**	**273,202**	**860,359**	**696,832**	**1,557,191**		**+5**
1957	17,695	38,399	52,706	170,660	141,519	47,969	180,776	209,704	184,231	337,578	165,194	122,634	752,091	732,743		1,484,834	
% Change	+54	+37	+9	−83	+9	+31	+21	−16	+28	−23	+49	+123	+14	−5	+5		

*Incl. private: Bridges, public, $702,737 ('58) $771,987 ('57); private, $10,685 ('58) $9,426 ('57) †Unclassified, public, $1,369,289 ('58) $974,740 ('57); private, $429,222 ('58) $499,762 ('57)



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2. **STRENGTH**—The pencil lead must be strong, without brittleness or splintering, and able to take needle-point sharpness in all drafting degrees, yet withstand firm drawing pressure.

3. **UNIFORMITY**—The pencil lead must have a steadfast consistency of hardness in each degree, pencil after pencil, lead after lead—dependable grading in a full range of 20 degrees, 8B to 10H.

4. **BLACKNESS**—The pencil lead must have pure graphite-saturated consistency, assuring positive opacity. It must not be treated with foreign oily substances to give the illusion of black. Natural graphite blackness eliminates greasiness and reduces stains and smudges to the absolute minimum. Erasing must be quick and easy, and leave no ghosts.

5. **DENSITY**—The pencil lead must lay down solid opaque graphite-packed non-feathering lines in every degree, from the softest to the hardest drafting grades, providing maximum adhesion to give long-lasting age-resisting originals.

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Backlog of Heavy Construction in the Planning Stage

Record $114.2 Billion Is on the Drawing Boards

Summary of projects on file with ENGINEERING NEWS-RECORD covering proposed construction estimated to cost these minimum amounts or more: waterworks, excavation and irrigation, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, public and private, $400,000.

New projects proposed during 1958 ..... (millions) 16,650 — **Projects abandoned and removed from backlog** (millions) 3,779

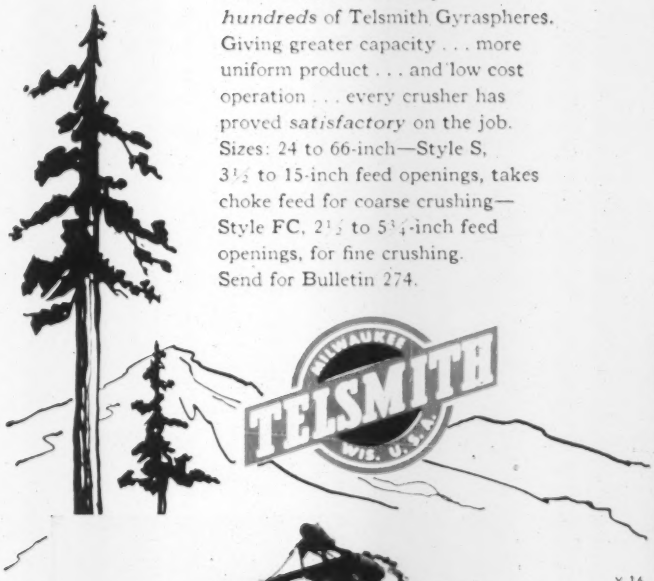
Projects moved out of backlog into contracts ..... " 10,179 — **Net increase in backlog during 1958** ..... " 2,693

Thousands of dollars (000 omitted), December 31, 1958

States	Public Works Projects: Water-works	Sewer-age	Bridges (includes private)	Earth-work irr.-drain.	Streets and roads	Buildings	Unclassified	Federal government work	Private Projects: Industrial buildings	Comm'l buildings	Unclassified	Construction: Private	Public	1958 TOTAL	1957 TOTAL	% Change '57-'58
UNITED STATES																
1958	2,860,000	3,575,776	3,419,439	11,905,899	12,918,874	20,658,134	9,614,118	14,077,536	17,075,420	22,391,744	9,954,782	48,506,129	64,670,057	114,175,186	.....	....
1957	2,422,318	3,362,019	3,400,938	12,369,500	13,179,685	20,207,781	9,702,197	14,004,945	16,773,820	20,252,966	9,810,832	46,925,839	64,556,217	.....	111,482,056	+ 2
% Change	+10	+6	+1	−4	−2	+2	−1	+1	+2	+11	+1	+5	0	+2	.....	....
NEW ENGLAND																
Me.	564	6,814	4,981	3,280	64,413	58,366	116,038	116,471	23,956	31,846	11,978	67,780	256,456	324,236	332,612	− 2
N. H.	3,830	8,531	41,764	5,069	4,150	49,277	29,192	34,744	8,812	29,614	11,566	49,992	141,822	191,814	186,702	+ 3
Vt.	2,262	9,964	6,304	87,866	9,733	48,252	3,227	85,142	4,870	12,428	3,406	20,706	167,708	188,414	172,904	+ 9
Mass.	39,420	55,909	107,724	52,169	1,111,818	696,981	229,743	228,165	206,330	591,184	109,505	907,219	2,293,264	3,200,483	3,205,146	0
R. I.	6,546	32,122	36,210	3,437	60,512	98,250	40,597	71,152	56,892	49,633	30,606	150,633	264,183	414,816	437,592	− 5
Conn.	31,280	106,320	108,400	149,004	346,540	661,133	82,828	142,262	236,092	777,452	101,213	1,115,562	1,482,300	2,597,862	2,458,234	+ 6
1958	83,911	219,660	304,383	300,825	1,596,866	1,612,258	501,725	677,936	537,552	1,492,157	268,278	2,311,892	4,605,733	6,917,625	.....	+ 2
1957	67,161	208,542	298,014	285,282	1,699,809	1,600,176	541,909	717,198	423,412	1,414,389	254,496	2,106,227	4,686,963	.....	6,793,190	....
% Change	+25	+5	+2	+5	−6	+1	−7	−5	+27	+5	+5	+10	−2	+2	.....	....
MIDDLE ATLANTIC																
N. Y.	187,651	318,546	543,655	507,888	763,334	3,082,769	1,451,915	446,124	808,804	2,587,960	211,405	3,611,855	6,852,072	10,463,927	10,821,576	− 3
N. J.	69,024	119,269	228,118	75,451	1,379,988	791,349	319,239	114,632	525,266	841,560	168,321	1,536,348	2,981,237	4,517,585	4,713,269	− 4
Pa.	26,260	166,266	174,978	320,114	1,552,878	1,107,646	424,503	464,307	1,047,291	1,228,917	237,677	2,517,306	3,769,224	6,286,530	5,934,265	+ 6
Md.	72,037	22,380	983	59,984	483,598	286,439	204,211	253,941	316,144	277,276	84,205	677,625	1,129,632	1,807,257	1,748,516	+ 3
D. C.	7,589	11,283	60,856	1,998	42,412	340,043	39,416	324,386	2,665	390,326	2,492	395,483	503,597	899,080	900,069	0
Del.	2,027	10,581	12,437	51,114	36,198	61,686	13,276	67,519	43,414	115,931	38,400	197,745	187,319	385,064	350,609	+10
1958	364,588	648,325	1,021,027	1,016,549	4,258,408	5,669,932	2,452,560	1,670,909	2,743,884	5,441,970	742,500	8,936,362	15,423,081	24,359,443	.....	0
1957	419,188	656,520	1,033,350	1,310,238	4,391,266	5,501,155	2,501,135	1,556,347	2,868,804	5,048,042	738,606	8,668,579	15,799,725	.....	24,468,304	....
% Change	−13	−1	−1	−22	−3	+3	−2	+7	−4	+8	+1	+3	−2	0	.....	....
SOUTH																
Va.	17,080	58,024	28,266	103,468	206,326	350,458	126,125	370,522	213,250	242,469	114,627	570,355	889,747	1,460,102	1,457,372	0
W. Va.	4,904	44,319	7,960	38,701	29,530	75,550	45,114	66,778	213,700	20,940	22,438	257,253	245,903	503,156	482,121	+ 4
N. C.	21,554	34,480	14,922	207,267	33,350	188,706	73,056	366,345	246,417	85,716	106,085	438,496	573,057	1,011,553	1,055,074	− 4
S. C.	30,163	16,608	8,946	134,892	14,205	126,090	93,048	246,209	291,339	95,349	53,689	440,377	423,942	864,319	843,140	+ 3
Ga.	26,647	42,300	33,885	100,107	87,554	307,591	76,329	243,869	202,486	165,547	95,658	464,441	673,672	1,138,113	963,282	+18
Fla.	14,712	86,121	73,332	17,334	273,071	210,543	132,193	153,207	384,704	611,983	83,462	1,080,774	806,681	1,887,455	1,661,102	+14
Ala.	37,152	45,317	12,636	115,729	79,755	408,648	96,858	356,862	619,120	131,617	211,143	962,380	795,595	1,757,975	1,473,193	+19
Miss.	12,886	8,715	43,060	19,336	7,675	118,823	79,835	111,710	136,722	38,443	273,485	450,590	288,390	738,980	637,130	+16
La.	21,570	35,954	53,144	82,196	74,342	159,046	92,386	193,546	583,389	146,481	502,503	1,233,142	518,959	1,752,101	1,628,906	+ 8
Ky.	11,448	51,552	61,074	64,580	21,394	148,418	30,070	114,575	415,307	121,588	174,664	711,559	388,536	1,100,095	942,028	+17
Tenn.	17,937	48,528	60,491	87,399	40,477	409,399	102,891	269,697	358,288	242,816	176,938	778,042	767,122	1,545,164	1,358,922	+14
1958	216,053	471,927	397,716	972,009	867,679	2,503,262	947,905	2,496,320	3,664,731	1,902,949	1,814,782	7,387,409	6,371,804	13,759,013	.....	+ 2
1957	202,090	450,307	401,462	975,021	944,586	2,440,538	1,005,153	2,536,174	3,502,264	1,727,183	1,800,007	7,033,919	6,414,692	.....	13,448,611	....
% Change	+7	+5	−1	0	−8	+3	−6	−2	+5	+10	+1	+5	−1	+2	.....	....
MIDDLE WEST																
Ohio	175,115	338,294	174,696	127,357	606,840	1,116,866	219,116	268,896	1,221,907	1,611,937	489,414	3,336,543	2,744,999	6,081,542	5,773,274	+ 5
Ind.	20,082	59,339	92,589	94,662	456,604	439,688	67,419	115,751	757,573	367,273	161,755	1,287,041	1,229,943	2,516,984	2,420,282	+ 4
Ill.	122,689	192,753	229,006	243,980	1,352,289	755,279	321,229	232,826	933,605	1,377,717	252,289	2,580,114	3,200,722	5,780,836	5,658,598	+ 2
Wis.	66,668	83,006	74,555	49,306	41,454	323,524	48,044	122,438	166,894	254,974	56,476	478,444	686,457	1,164,901	1,140,328	+ 2
Mich.	168,224	303,658	203,308	93,809	636,104	1,163,835	183,243	283,932	478,444	780,394	219,185	1,478,023	2,752,181	4,230,204	4,355,354	− 3
1958	552,778	977,050	774,154	609,114	3,093,291	3,799,192	839,051	1,023,843	3,558,423	4,392,295	1,179,119	9,160,165	10,614,302	19,774,467	.....	+ 2
1957	557,327	924,395	813,439	561,596	3,295,769	3,715,248	832,097	961,017	3,556,413	3,891,839	1,199,713	8,678,855	10,668,981	.....	19,347,836	....
% Change	−1	+6	−5	+8	−6	+2	+1	+7	0	+13	−2	+6	−1	+2	.....	....
WEST OF MISSISSIPPI																
Minn.	32,130	43,418	36,958	10,834	15,109	213,681	66,259	26,428	289,520	231,286	124,517	647,170	416,542	1,063,712	940,891	+13
Iowa	6,052	18,994	16,961	66,153	244,802	112,671	11,132	70,546	326,279	109,405	175,205	612,069	475,585	1,087,654	1,037,860	+ 5
Mo.	61,415	80,084	49,189	189,450	316,363	491,288	89,894	340,310	198,295	415,390	302,716	920,609	1,273,495	2,194,104	2,226,622	− 1
Ark.	22,122	27,365	17,097	279,558	39,557	137,246	56,792	315,022	274,991	107,170	223,963	606,339	579,522	1,185,861	1,217,938	− 3
N. D.	5,646	5,634	83	155,395		22,358	38,039	183,845	11,610	15,366	51,767	78,743	227,155	305,898	305,512	0
S. D.	7,634	2,730	1,425	116,747	40,694	24,117	10,212	128,440	5,311	9,132	48,582	63,025	203,559	266,584	227,181	+17
Neb.	24,469	35,189	20,673	139,933	17,025	222,466	82,789	190,145	95,080	79,003	88,412	263,948	541,091	805,039	834,790	− 4
Kan.	20,906	67,690	11,400	223,009	68,841	190,242	76,198	339,733	104,316	96,253	228,870	429,439	658,286	1,087,725	1,055,477	+ 3
Okla.	57,363	30,683	20,629	270,653	152,452	237,728	158,250	424,722	167,286	168,923	224,255	560,953	927,269	1,488,222	1,463,121	+ 2
Tex.	462,788	234,398	124,419	1,104,960	262,539	1,359,273	838,184	1,236,852	2,700,238	2,583,638	1,630,395	6,928,564	4,352,268	11,280,832	10,793,405	+ 5
Mont.	8,864	10,632	67,479	315,049	15,097	76,024	25,527	336,283	37,519	25,330	31,400	94,249	518,672	612,921	583,701	+ 5
Wyo.	5,218	5,779	3,520	205,302	16,473	36,733	61,857	277,691	108,711	14,434	83,287	206,432	334,882	541,314	484,389	+12
Colo.	96,905	18,538	8,933	341,196	139,237	288,045	145,530	479,063	93,528	296,798	224,942	615,268	1,038,384	1,653,652	1,599,772	+ 3
N. M.	5,413	5,572	1,397	51,788	3,255	110,403	93,717	175,469	152,668	92,475	206,683	451,876	271,495	723,371	721,658	0
1958	816,925	586,706	380,163	3,470,027	1,331,444	3,502,275	1,754,380	4,524,549	4,585,352	4,244,593	3,645,024	12,478,684	11,818,205	24,296,889	.....	+ 3
1957	794,808	624,152	388,447	3,428,497	1,227,673	3,541,806	1,802,496	4,594,886	4,411,765	3,690,466	3,582,207	11,708,267	11,784,050	.....	23,492,317	....
% Change	+3	−6	−2	+1	+8	−1	−3	−2	+3	+15	+2	+7	0	+3	.....	....
FAR WEST																
Idaho	4,174	12,880	24,361	112,374	109,886	53,290	27,545	139,353	25,810	17,641	555,726	599,177	344,510	943,687	847,992	+11
Utah	17,660	30,736	6,431	118,206	54,555	149,818	23,865	118,914	63,700	95,301	162,299	321,300	401,271	722,571	750,946	− 4
Ariz.	39,390	17,582	2,947	599,133	86,430	66,242	105,404	676,696	140,502	140,397	195,895	676,794	917,328	1,594,122	1,442,885	+ 3
Nev.	8,918	2,037	4,304	38,136		35,174	18,499	34,367	21,012	65,651	44,790	131,453	107,068	238,521	246,967	− 3
Wash.	108,378	92,575	254,975	1,835,387	678,289	922,653	369,117	1,573,561	493,010	585,755	285,697	1,365,569	4,260,267	5,625,836	5,262,052	+ 7
Ore.	5,338	52,523	29,142	246,151	28,899	101,265	22,621	268,972	254,357	61,156	343,874	650,387	485,939	1,145,326	1,081,135	+ 6
Calif.	441,687	463,775	219,836	2,587,988	814,127	2,242,763	2,551,446	872,116	1,007,387	3,951,879	716,798	5,676,937	9,320,749	14,997,686	14,299,821	+ 5
1958	625,745	672,108	541,996	5,537,375	1,772,186	3,571,205	3,118,497	3,683,979	2,005,778	4,917,780	2,305,079	9,230,617	15,837,132	25,067,749	.....	+ 5
1957	381,744	498,103	466,226	5,808,866	1,620,582	3,408,858	3,019,407	3,639,323	2,011,162	4,481,047	2,235,803	8,729,992	15,201,806	.....	23,931,798	....
% Change	+64	+35	+16	−5	+9	+5	+3	+1	0	+10	+3	+6	+4	+5	.....	....
CANADA																
1958	200,558	278,212	237,261	820,531	1,176,233	2,154,675	1,437,242	882,649	2,591,847	2,336,477	2,277,209	7,207,957	6,302,488	13,510,445	.....	+ 1
1957	208,392	288,143	226,461	768,451	1,256,653	2,203,881	1,471,859	920,051	2,534,719	2,213,930	2,265,497	7,016,470	5,421,516	.....	13,437,986	....
% Change	−4	−3	+5	+7	−6	−2	−2	−4	+2	+6	+1	+3	−2	+1	.....	....
ALASKA (not included in U S Total)																
1958	18,569	6,267	1,959	18,972	46,140	64,389	48,438	152,646	33,831	48,503	18,569	100,903	205,734	306,637	.....	....

the Pacific Coast goes for GYRASPHERES

Out where the rock is really hard—there are literally *hundreds* of Telsmith Gyraspheres. Giving greater capacity . . . more uniform product . . . and low cost operation . . . every crusher has proved *satisfactory* on the job. Sizes: 24 to 66-inch—Style S, 3½ to 15-inch feed openings, takes choke feed for coarse crushing—Style FC, 2½ to 5¾-inch feed openings, for fine crushing. Send for Bulletin 274.



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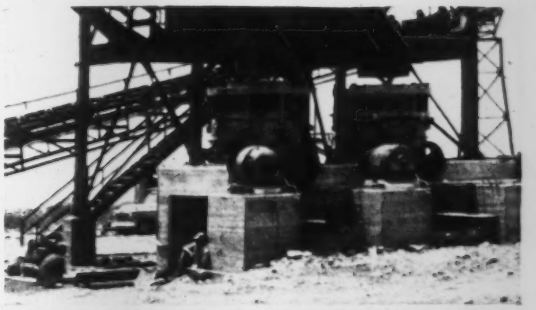
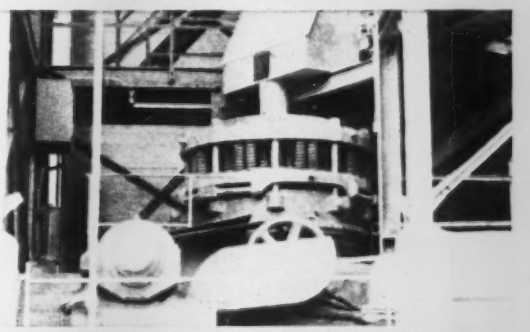
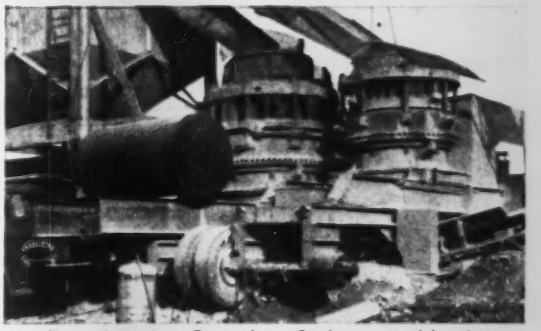


Mountain Rock Products, Upland, Calif., has a 48-S Gyrasphere for coarse, a 48-FC for fine crushing



British Columbia Portland Cement Co. Ltd., Victoria, increased cement mill output with a 48-FC Gyrasphere



Two of the four Gyrasphere Crushers owned by the Associated Sand & Gravel Co., Everett, Washington

This 66-FC is one of seven big capacity Gyraspheres owned by Rogers Construction Co., Portland, Oregon

Pacific Cement & Aggregates, Inc., Clayton, Calif., has a very efficient pair of 36 Gyraspheres

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Backlog of Proposed Work

(in the Planning Stage, Dec. 31)

Type of Construction	1946	1950	1954	1955	1956	1957	1958
	Millions of dollars						
All heavy construction	35,557	52,113	79,702	93,053	104,249	111,482	114,175
By ownership							
Private	7,705	18,250	33,157	39,136	43,637	46,926	49,505
Public	27,852	33,863	46,545	53,917	60,612	64,556	64,670
State & Municipal	18,682	24,109	34,184	41,177	46,971	50,551	50,593
Federal	9,170	9,754	12,361	12,740	13,642	14,005	14,077
By type of work							
Public							
Waterworks	1,131	1,387	1,647	1,990	2,229	2,422	2,660
Sewerage	1,996	2,182	2,916	2,988	3,214	3,362	3,576
Bridges*	1,264	1,692	2,342	2,760	3,043	3,401	3,419
Highways	4,153	4,598	8,599	11,313	12,672	13,180	12,920
Earthwork, waterways	7,543	7,282	9,334	11,293	11,417	12,369	11,906
Buildings, excl. housing	7,480	12,050	15,111	16,405	18,884	20,208	20,658
Housing							
Unclassified	4,291	4,717	6,677	7,246	9,244	9,702	9,614
Private							
Mass housing							
Commercial	3,545	6,963	12,947	15,767	18,210	20,253	22,392
Industrial	2,402	5,753	11,740	14,302	16,139	16,774	17,075
Unclassified	1,752	5,489	8,389	8,989	9,199	9,811	9,955

*Includes private bridges

Contract Awards

Type of Construction	1946	1950	1954	1955	1956	1957	1958	Forecast 1959	Forecast 1960
	Millions of dollars								
All heavy construction	5,176	12,352	14,412	18,722	21,712	17,986	19,165	20,150	21,500
By ownership									
Private	3,158	6,671	8,125	11,672	13,490	8,386	7,730	8,275	9,360
Public	2,018	5,681	6,287	7,050	8,222	9,600	11,435	11,875	12,140
State & Municipal	1,419	3,784	5,001	5,415	6,533	7,415	8,609	9,425	9,340
Federal	599	1,897	1,286	1,635	1,689	2,185	2,826	2,450	2,800
By type of work									
Public									
Waterworks	109	215	245	314	356	369	306	450	500
Sewerage	114	287	388	402	579	556	618	650	650
Bridges*	129	370	510	545	622	781	714	885	900
Highways	769	1,268	1,919	2,137	2,475	2,964	3,729	4,000	4,300
Earthwork, waterways	328	417	339	546	730	969	1,045	800	750
Buildings, excl. housing	248	2,405	1,762	1,741	2,099	2,353	2,610	2,600	2,550
Housing	166	359	255	246	318	642	1,055	900	900
Unclassified	158	371	880	1,121	1,053	975	1,369	1,600	1,600
Private									
Mass housing	1,518	3,117	4,232	6,138	5,307	3,039	3,739	3,850	4,300
Commercial	328	975	1,421	1,656	2,051	1,757	1,795	1,925	2,200
Industrial	1,113	1,683	1,876	2,951	5,335	3,081	1,756	1,850	2,100
Unclassified	196	885	585	925	787	500	429	640	750

Where to Find New Business

Bigger business for heavy construction contractors in 1959 and 1960 will result from the increased flow of projects into the planning stage (table above). ENR forecasts that heavy construction contracts will rise 5% in 1959 and 7% more in 1960.

Increasing private construction awards will reflect the climb in proposed projects in 1958. Starting from a low last July, proposed private projects rose to a 16 months high of $1,019 million in December (table below).

The impact of this stepped up flow of private work on the drawing boards should give contract awards a lift by the second quarter of 1959. It takes six months for new projects to move through the planning stage in enough volume to affect the contract trend. Full impact is usually felt in nine months.

Public construction awards will rise in this year and in 1960. A possible crimp in new federal starts anticipated for this year should be eased in 1960. But Capehart military housing awards are expected to drop.

State and municipal contracts are expected to rise this year but taper off in 1960. The 1960 dip would reflect the 1957-58 decline in proposed state and local projects. It takes a new trend in proposed public works two years or more to show up in contract awards.

However, total state and local construction in planning continues to rise because the flow into the planning stage is much greater than the flow out into construction contract. So future awards should remain high.

How ENR's Backlog Feeds Future Contracts

	Private Construction (Millions of $)			State & Municipal Construction (Millions of $)			Federal Construction (Millions of $)		
	New Proposed Work Flowing into Backlog	Moving Out of Backlog to Contract	Total Contracts Reported	New Proposed Work Flowing into Backlog	Moving Out of Backlog to Contract	Total Contracts Reported	New Proposed Work Flowing into Backlog	Moving Out of Backlog to contract	Total Contracts Reported
1951 Year	10,551	3,485	7,436	4,761	2,308	3,923	3,734	928	2,246
1952 Year	7,979	3,031	7,113	5,453	2,344	4,075	2,121	1,366	4,101
1953 Year	7,998	3,913	8,665	7,160	2,780	5,087	886	759	1,418
1954 Year	8,241	2,756	8,125	6,423	2,988	5,001	957	763	1,286
1955 Year	11,672	4,570	11,673	10,952	3,348	5,415	1,398	927	1,635
1956 Year	12,825	5,417	13,490	10,804	3,652	6,533	2,014	887	1,689
1957 Year	6,883	3,505	8,386	9,650	4,580	7,415	1,843	1,283	2,185
1958 Year	7,353	2,791	7,730	7,051	5,598	8,608	2,247	1,790	2,826
Jan	784	254	521	711	447	611*	82	71	126
Feb	689	241	613	698	268	424	57	82	137
Mar	589	224	618	763	404	619	308	108	161
Apr	450	240	813	584	375	589	39	141	181
May	513	355	973	709	665	930	76	265	410
June	635	254	634	420	539	824	42	265	442
July	437	226	822	457	642	1,032	151	372	629
Aug.	494	252	721	333	444	733	52	95	167
Sept.	503	152	409	399	447	809	1,057	88	130
Oct.	608	205	613	930	529	823	296	155	185
Nov.	632	142	430	619	401	576	24	46	106
Dec.	1,019	244	562	529	438	637	63	111	152

Housing and Public Building Awards

Thousands of dollars

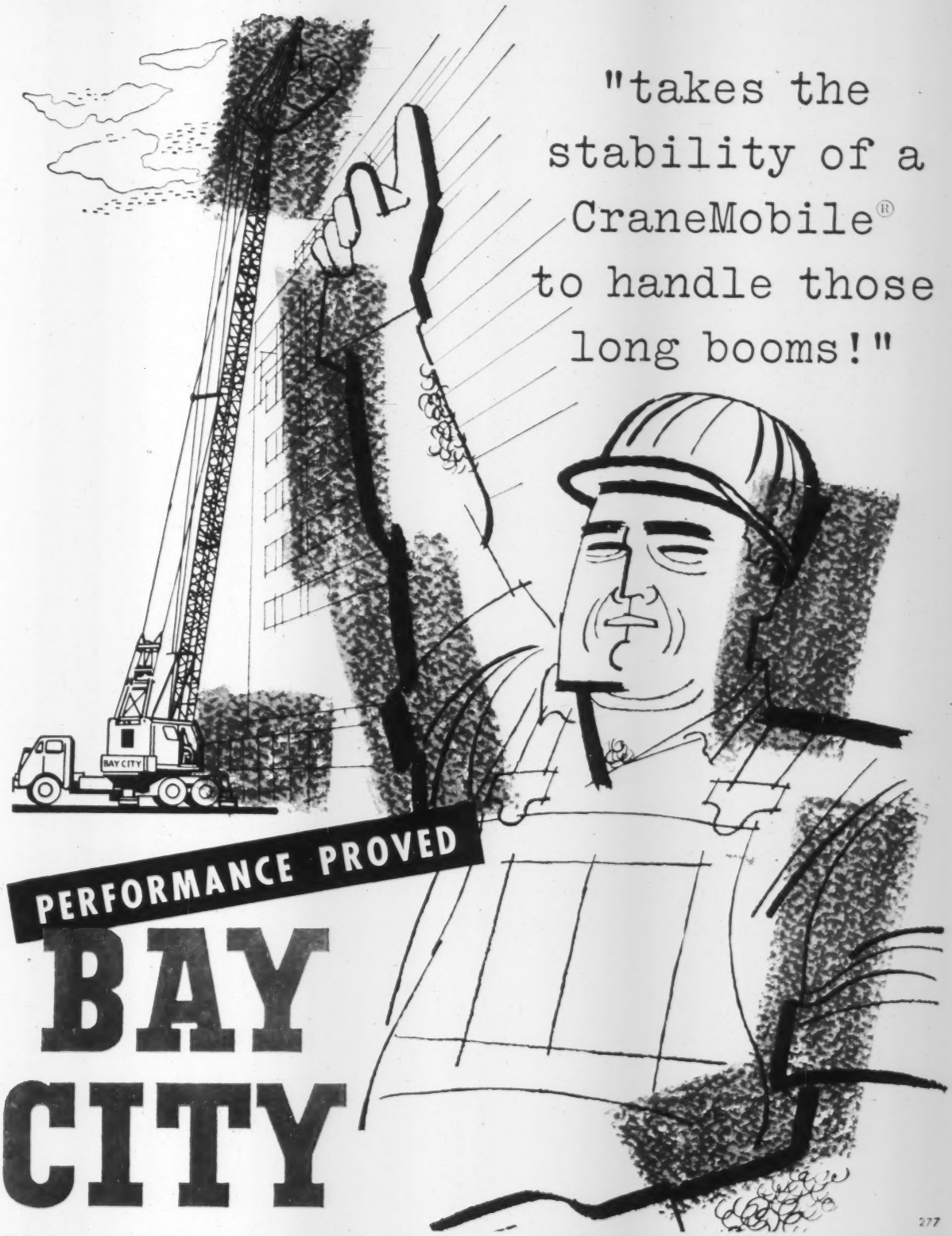
	1956	1957	1958
Private Mass Housing			
One-family homes	$4,812	$2,509	$3,000
Apartments	328	264	450
Hotels & motels	65	157	136
Institutional	102	108	153
Public Mass Housing			
State, municipal	318	642	1,055
Slum clearance	119	182	293
Other	112	102	140
Federal, military	87	358	621
Public Buildings, Excluding Housing	2,099	2,353	2,610
State, municipal	1,822	1,976	2,053
Federal	277	377	557
Industrial	124	152	300
Other	153	225	257

Unclassified Contracts

Thousands of dollars

	1956	1957	1958
Private			
Transmission Lines	$39,862	$32,705	$32,129
Pipelines	261,672	257,379	188,628
Railroads	34,497	31,509	5,199
Telephone	15,886	16,516	23,646
Drive-in-Theatres	919	619	200
Radio & TV	8,063	5,639	20,491
Airports	13,890	8,868	28,390
Other[1]	412,526	146,527	130,539
Total Private	787,315	499,762	429,222
Public—Federal			
Airports, Airbases	130,371	184,069	404,121
Hangars, Buildings	218,499	212,718	219,182
Airport Housing	78,313	53,838	62,167
Airport Facilities & Util	142,864	107,653	155,616
Shipyards	19,318	18,011	6,703
Other	150,166	86,732	147,033
Total Federal	739,531	663,021	994,822
Public—State & Municipal			
Airports	97,313	89,788	127,787
Subways, Tunnels	82,366	45,011	55,613
Other	134,252	176,920	191,067
Total State & Municipal	313,931	311,719	374,467
Total Public	1,053,462	974,740	1,369,289
Total Unclassified	$1,840,777	$1,474,502	$1,869,051

[1]Includes private-owned hydroelectric power plants.



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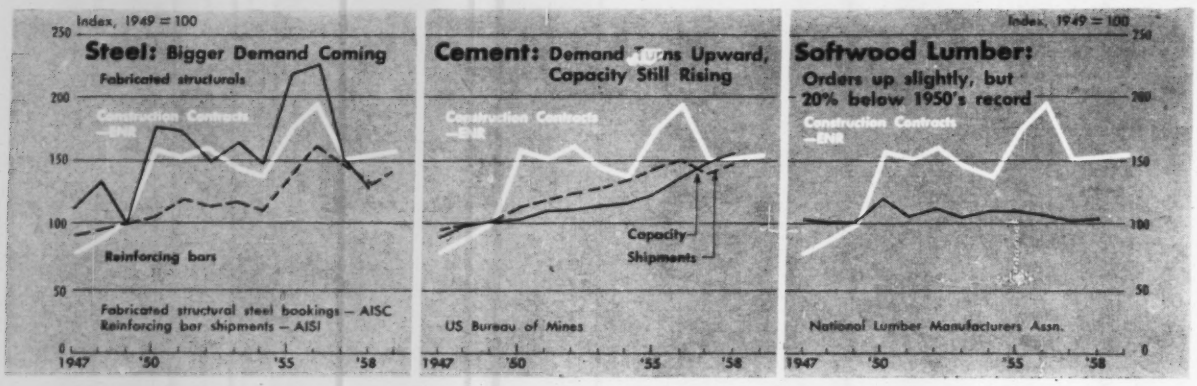


Materials and Equipment . . .

Supply Outlook Is Good

Construction contractors can count on fast deliveries and good supplies of key materials and equipment this year. Moreover, the outlook is for relatively stable materials prices and little change in equipment prices—at least until fall.

Though demand for materials and equipment is firming up, orders have a long way to go before production moves close to capacity and deliveries slow up. The only bottleneck in major materials is glass. This is due to a long strike that tied up Pittsburgh Plate Glass.

Orders for the three key construction materials—structural steel, Portland cement and softwood lumber—are on the rise. Lumber prices reflect the firming market by rising in several cities. However, they are still below the previous high reached last October and they are even further below the record high hit in 1956.

Cement prices rose at mills in the Northeast and West Coast in January, but held steady in other areas. With the mills in all parts of the country announcing current prices will hold through December 31, 1959, contractors will have one less cost inflator to worry about the rest of this year.

In fact, prices in northeastern cities are scheduled to come back down a bit on April 1 when railroads reduce freight rates. Their objective is to recapture cement business lost to truckers.

Cement should be readily available in 1959 because capacity is at a record high of 398 million bbl per year. This is well above 1958's shipments, which totaled 307 million bbl, up 6% over 1957 and only a shade below 1956's record.

During 1958 cement mills operated at an average of 81% of rated capacity, compared with 84% in 1957 and 99% to 100% during 1955 and 1956.

Structural steel fabricators look for a bigger volume of new business in 1959 than in 1958. The American Institute of Steel Construction forecasts "over 3 million tons" in 1959 bookings, 8% more than 1958 and, on a par with 1957. However, the rate of orders is well below the postwar high of 4.7 million tons in '55 and '56. The '59 forecast indicates that contractors may again be in a buyer's market for fabricated structural steel. Prices are likely to remain at the low level of 1957-58.

Though 1958 totals show shipments were down for most construction materials, demand firmed up for most items late in the year. In some cases, this upturn offset earlier declines but in others it was not enough.

Construction equipment orders in 1958 topped '57 by 3.4%, according to the McGraw-Hill Department of Economics Index (chart below). The orders index averaged 237 for the year, based on 1949 = 100. Orders followed closely ENR's Contract Award Index, which averaged 235 for the year, up 7%.

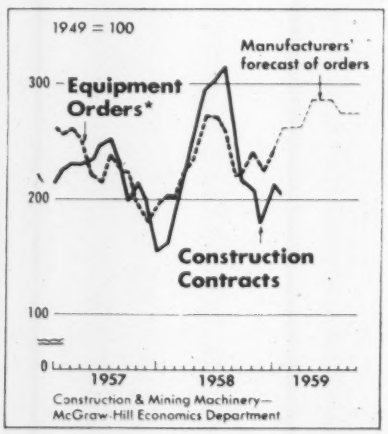
List prices of construction equipment should hold steady during the next nine months. Most manufacturers upped prices late in 1958. However, prices are likely to go up again next fall as they have in each of the last four years. Reasons will be the same: higher costs of steel and labor.

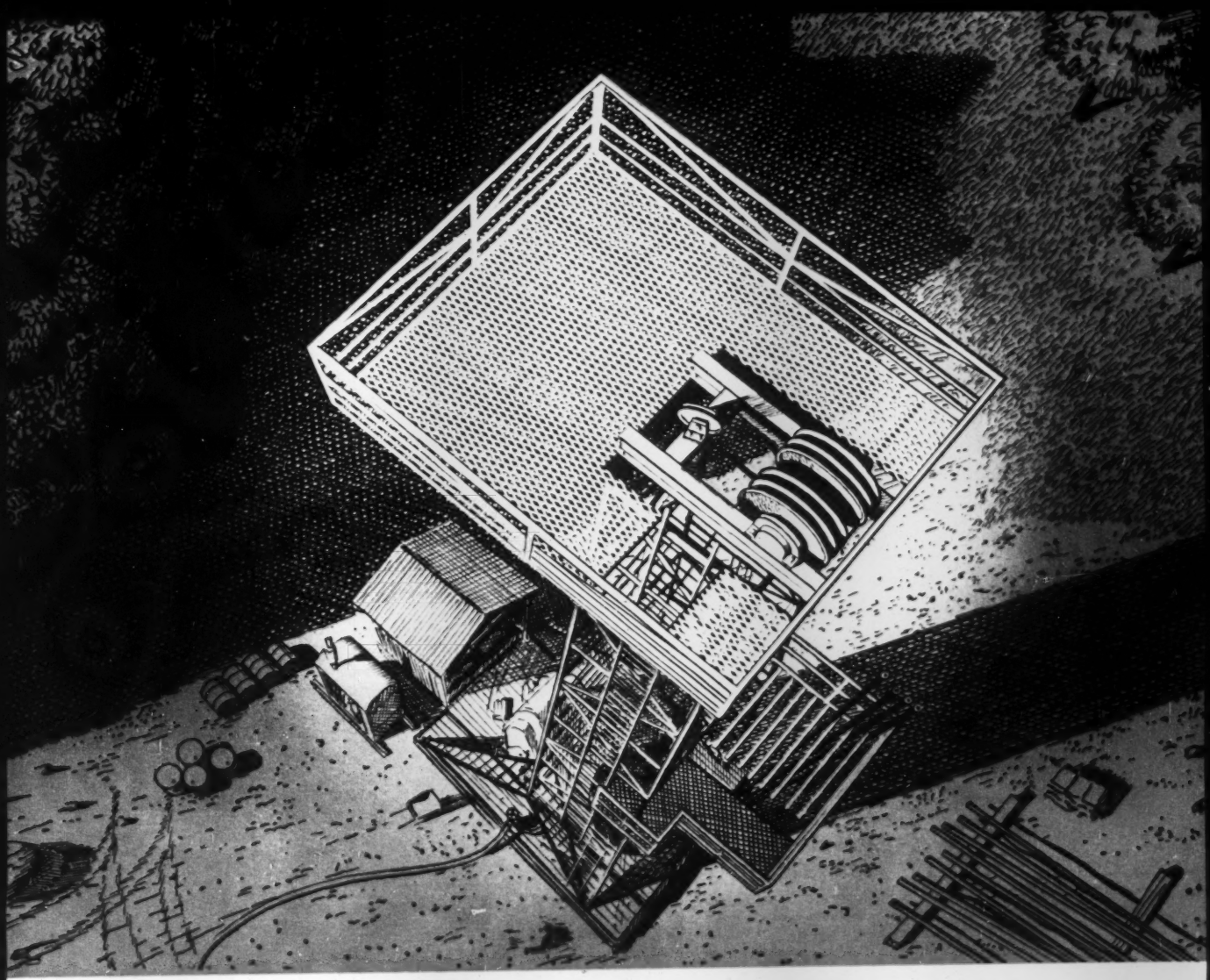
Fewer work stoppages at equipment plants in '59 should keep the production lines humming. However, Allis-Chalmers was hit by a strike a couple of weeks ago and this may affect deliveries if it lasts a month or so.

Report on Materials, Equipment Shipments

Material	Source	Unit	1956	1957	1958	Change '57 '58
Steel						
Fabricated structural bookings	AISC	thous tons	4,013.2	3,073.2	2,773.4	−10
Fabricated structural shipments	AISC	thous tons	3,205.5	4,179.7	3,664.2	−12
Reinforcing bars (net)	AISI	thous tons	2,517.8	2,286.3	2,034.8	−11
Cement, Portland						
Shipments	Bu Mines	mil bbls	308.8	297.8	307.0	+ 6
Concrete pavement awards	PCA	mil sy	84.9	94.0	121.3*	+30
Lumber						
Orders	NLMA	mil fbm	36,186.0	33,257.0	33,312.0	+ 0.2
Production	NLMA	mil fbm	37,528.0	33,572.0	33,225.0	− 1
Shipments	NLMA	mil fbm	36,413.0	33,831.0	33,630.0	− 1
Clay construction products						
Brick, unglazed common and face	Bureau	mil std brk	6,198.1	6,194.5	6,490.0*	+ 6
Structural tile, unglazed	of	thous tons	621.1	578.0	560.0*	− 3
Vitrified clay sewer pipe	Census	thous tons	1,852.7	1,638.6	1,525.0*	− 7
Aluminum wrought products (net)						
Sheet & plate, non heat-treatable	Bureau	mil lbs	1,050.6	944.8	935.0*	− 1
Wire and cable	of	mil lbs	303.0	281.6	265.0*	− 6
Extruded shapes, soft alloy	Census	mil lbs	641.0	644.9	681.0*	+ 6
Asphalt products						
Roofing	Bu of	thous sqs	57,590.4	53,326.1	58,400.0*	+10
Siding	Census	thous sqs	1,208.3	1,035.8	1,038.0*	+ 0.2

*Estimated





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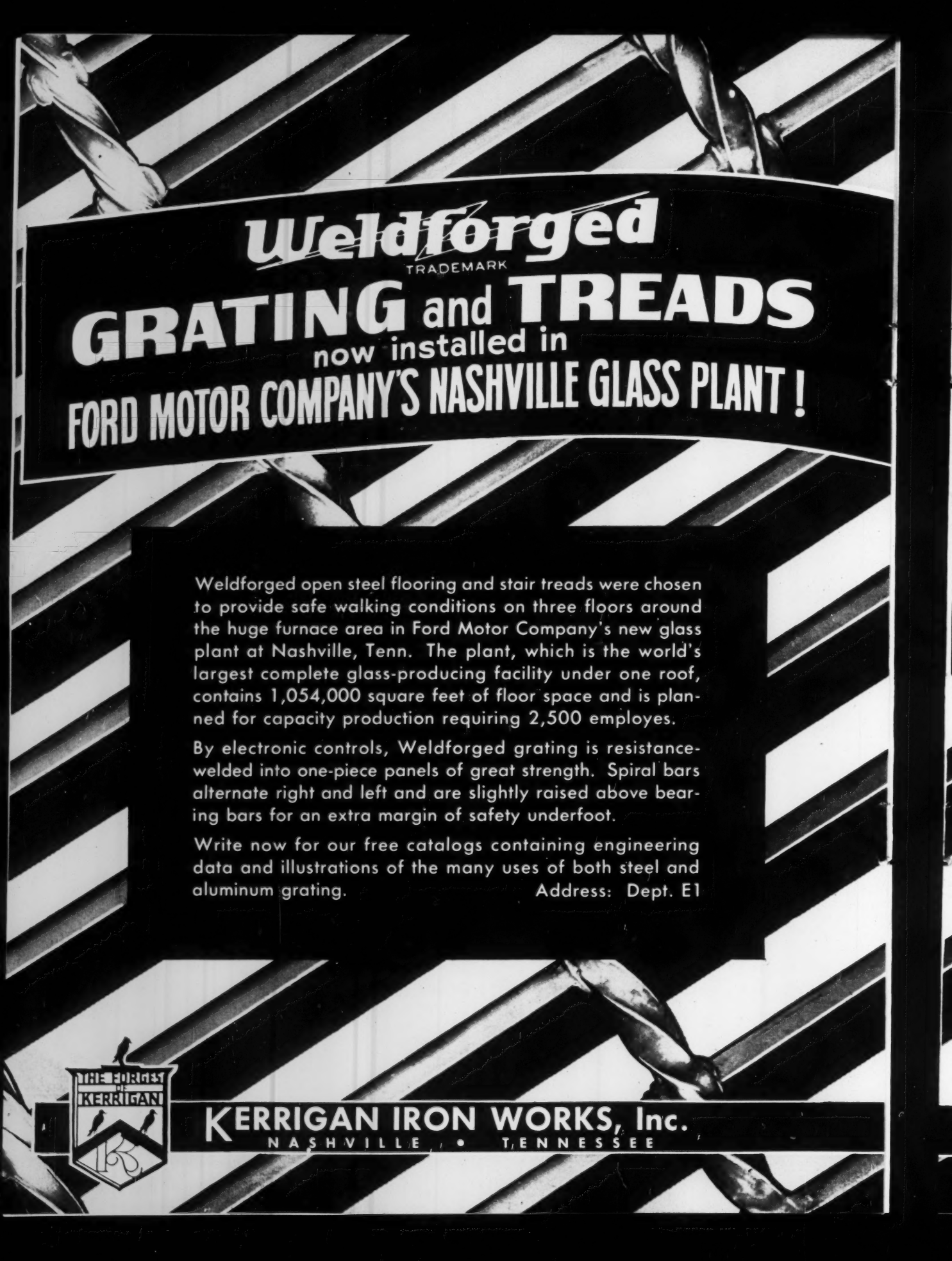
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Interest Rates May Increase

Many investors are betting on higher interest rates. If they're correct, federal, state and local governments and corporations will only lose time by waiting for less costly borrowing for construction purposes.

The expectation of higher interest rates is graphically illustrated by the recent refunding operation of the U. S. Treasury. Holders of $2.1 billion of the $14.9 billion of maturing debt demanded cash instead of accepting new debt in exchange.

This was no comfort to federal budgetary officials or investors. It only underlined the inflation psychology affecting the bond market and the stock market.

It also emphasizes the influence of the federal government on all economic planning. Industry and local governments are forced to mark time until the financial course of the U. S. government is determined.

William McChesney Martin, Jr., chairman of the Federal Reserve Board, says right now is the time for a balanced budget. He says the federal budget should not only be balanced, but there should be a surplus—a sizable one.

He told the Joint Congressional Economic Committee that the "inflammable tinder" of inflation is now "lying around" in the economy and "a breakout of price increases at any time" could occur.

He said that investors must have confidence that inflation will not cut the value of the dollar. There is no shortage of savings, he pointed out. They are at an adequate level for investment purposes and of sufficient quantity to justify lower interest rates. However, under existing conditions of more and bigger debt assumed by the federal government, investors will continue to avoid bonds that become cheaper as the ultimate purchasing power of the dollar is cut.

• **Supporting view**—Leading investment houses also anticipate continued pressure on the money market and a continuing trend to higher rates. Salomon Bros. & Hutzler expects "an excess of demand for long-term capital and a continuing restrictive monetary policy." Girard L. Spencer of that firm predicts interest rates will continue to rise, "at least during the first half of this year," but less rapidly than they have been.

• **Some indicators**—This month may provide some tentative signs of the money market drift during the first half of this year at least.

One month won't be conclusive, but it may help to determine the temper of the investor.

According to Winfield F. Stephens, manager of the municipal department of Hemphill, Noyes & Co., New York City investment house, February may prove to be a record-breaking month. Scheduled for sale are more than $450 million in tax-exempt bonds of all descriptions.

The week opened with $650 million definitely scheduled, but it was reduced by postponement of $200 million by the Chesapeake Bay Ferry Commission. This would have financed a projected bridge-tunnel crossing of Chesapeake Bay.

A quick cleanup of offered issues at rates near those prevailing in recent days could be a heartening indicator for municipalities planning financing.

One thing working in favor of state and local governments is the tax-exempt feature of their debt issues. With taxes of all types on the rise, the effective interest rate of bonds to high-income individuals and groups is much higher than printed. It is income upon which taxes do not have to be paid. This tax-out will become more attractive as state levies continue to soar.

Bond Sales for Construction Money

(millions of dollars)

	1953	1954	1955	1956	1957	1958	% Chg. '57-'58
All Construction	$5,031	$5,932	$5,008	$4,781	$5,803	$6,370	+10
Buildings	2,115	2,019	2,133	2,000	2,791	2,759	— 1
Schools	1,498	1,600	1,694	1,609	2,150	1,940	—10
Housing	283	112	102	91	185	116	—37
Other Buildings	334	307	337	300	456	703	+54
Heavy Construction	2,916	3,913	2,875	2,781	3,012	3,611	+20
Waterworks	327	376	366	396	520	477	— 8
Sewerage	421	383	356	426	418	478	+14
Bridges	347	310	106	51	70	64	— 9
Highways	1,393	1,740	1,261	609	860	986	+15
Earthwork, waterways & dams	32	127	95	19	23	424	+1743
Unclassified	396	977	691	1,283	1,121	1,182	+ 5
Electric and gas utilities	*	*	*	*	239	225	— 6
Airports	*	*	*	*	135	106	—21
Parking facilities	*	*	*	*	34	25	—26
Other	*	*	*	*	713	825	+16

* Not available

Construction Bond Sales Are Up

States and municipalities borrowed a record $6.4 billion in construction funds from the money market last year, an ENR analysis shows. This is a 10% gain over the previous year when state and local governments sold $5.8 billion in bonds.

The rise comes chiefly from a 20% increase to $3.6 billion in the sale of bonds for heavy construction. Bonds for building projects, at $2.8 billion, were 1% below the 1957 peak.

Borrowing for earthwork-waterways-dams jumped 1,743% to $424 million last year. Only $23 million was borrowed in 1957. More than half of last year's total was for the Rocky Reach hydroelectric project in Washington State.

Highway bond sales of $986 million are up 15% in 1958 from the previous year, but the total is short of the 1953-1955 period when annual highway bond sales topped $1 billion.

Borrowings for sewer projects rose 14% to a record of $478 million, but borrowings for waterworks, airports, and electric and gas facilities declined.

Bonds to finance institutions, hospitals, court buildings and other state and municipal buildings climbed 54% over 1957 to a total of $703 million. This is a new record.

Bond sales for public housing, however, slumped 37% in 1958 to $116 million. Borrowing for school construction tumbled 10%, but the $1.9 billion sold is the second best on record. The record was set in 1957 with a total of $2.2 billion.

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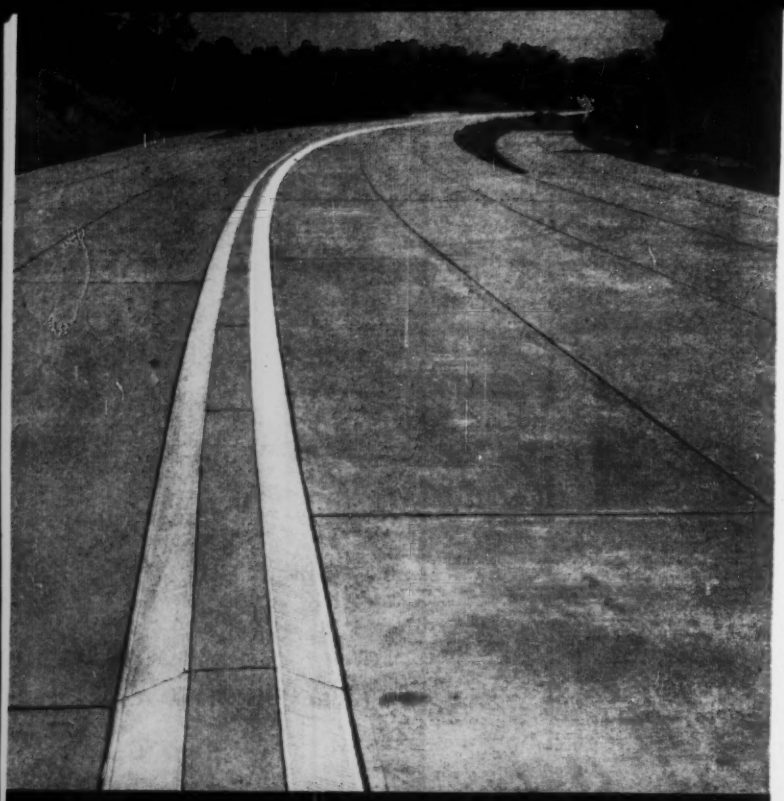

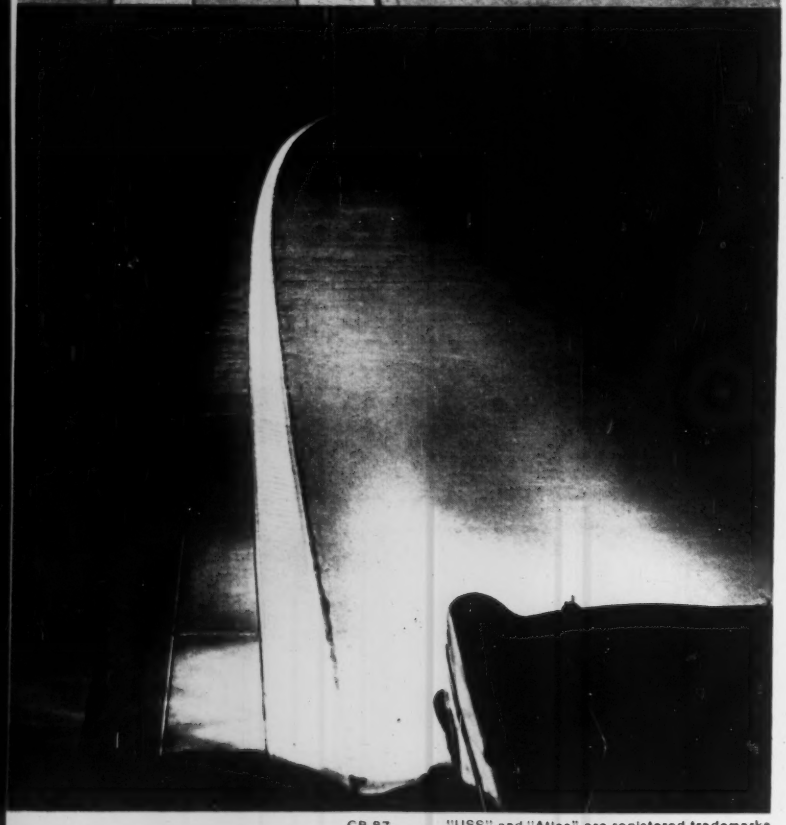

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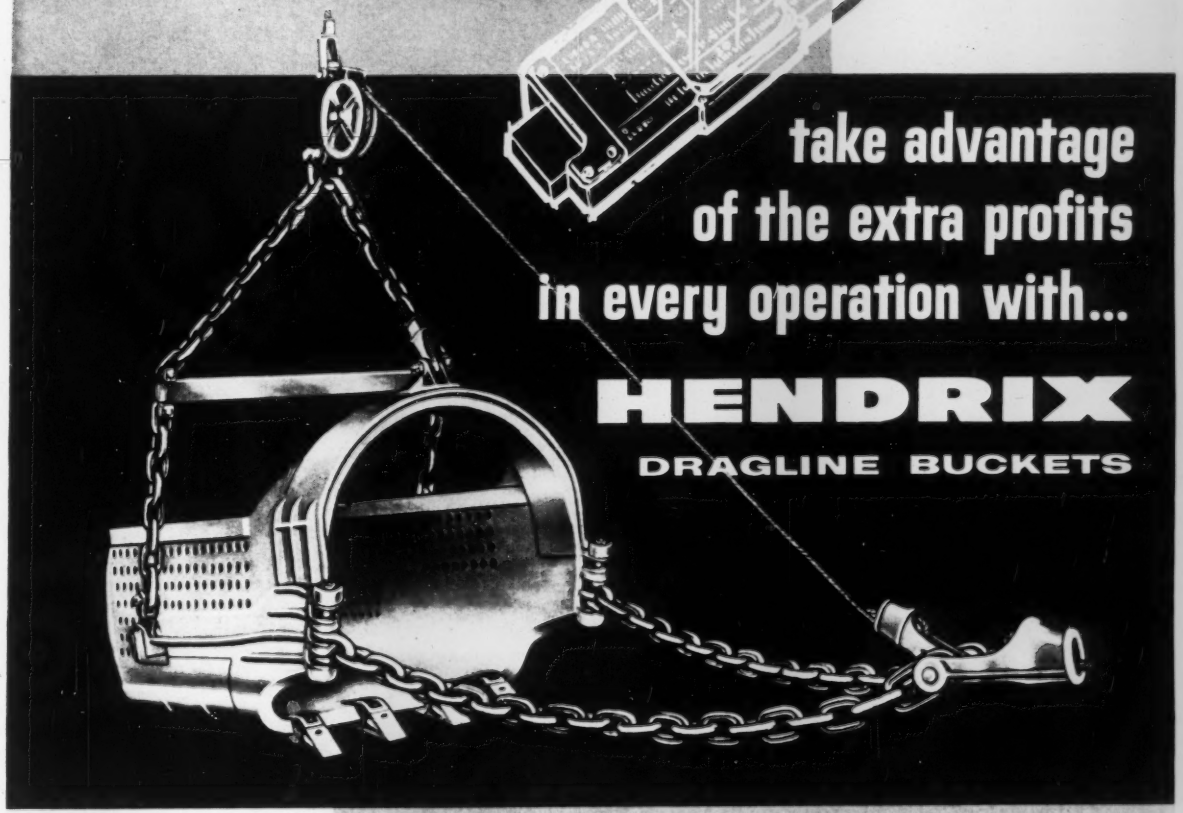

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MANSFIELD, LOUISIANA

	Bid.	Asked.	Prev. Bid.
Grt N Orleans Exp 4s, '94	93¾	94¾	93¾
Ill State Toll High 3¾s, '95	72½	73½	72½
Ill State Toll High 4¾s, '98	85½	86½	85¾
Indiana Toll Rd 3½s, 1994	85¾	86¾	85¾
Jacksonville Exps 4¼s, '92	103¾	104¾	103¾
Kansas Tpke 3⅜s, '94	74	75	74
Kentucky Tpke 3.40s, '94	90	92	90½
Mackinac Brdg 4s, 1994	85	87	85
Maine Tpke 4s, 1989	93	95	93

	Bid.	Asked.	Prev. Bid.
Md Br & Tunnel 3s, 1994	95	96	95
Mass Tpke 3.30s, '94	81	82	81¼
Memphis Elec Plt 4.40s, '92	107½	108½	107¾
Mississippi Riv Br 3.60s, '94	95½	97½	95½
NJ Highway Auth 4⅜s, '88	104½	106½	104½
NJ Tpke 3⅜s, 1988	97	98	97
NY Port Cons 3s, 1986	85½	87¼	85¼
Ohio Tpke 3.10s, 1994	81	82	81
Ohio Tpke 3¼s, 1992	89½	90½	89½
Penn Tpke 3.10s, 1993	84¾	85¾	84¾
Penn Tpke 3¼s, 1988	102½	103½	102½
Puerto Rico Aqdt&S4s, 1992	95	97	95
Puerto Rico Wtr Rt.10s, 1995	96	100	96
Texas Tpke 2⅞s, 1995	75½	77½	75½
Triborgh Br 2⅛s, 1969	83½	85½	83½
Virginia Toll Rev. 3s, 1994	87	88½	87
Va Tpke 3¾s, 1989	52	53½	52
WVa Pow 3.20s, 1995	83¼	84¼	83¼
WYS Thru "A" 3.10s, 1994	91	92	91

Making Better Use of Your Assets

- **Public and community relations can be a business builder and a career builder for individual construction men.**
- **Big operations often hire specialists, but even a small firm can use PR effectively on a do-it-yourself basis.**

Communities are planning to build more waterworks, more schools, more sewage disposal plants. States are planning to build more highways, more bridges, more buildings. The federal government plans to build more defense installations.

But is your organization planning to compete more successfully, to get more of the architectural and engineering design work, more construction contracts?

• How PR can pay off—One often-overlooked weapon is public relations. Some construction companies, engineering firms and architectural firms retain specialists in this field. Others have a man on the payroll.

A large operation may be able to hire specialists. The small firm or company may have to make use of its own talent and resourcefulness. At its simplest, it will require spending a little time.

But large company or small, community and public relations are an important part of any firm's day-to-day operation. A good program can help improve its business.

Taking part in the economic affairs of the community is a responsibility, as well as a business requirement.

For the individual construction man, community activities help develop broader contacts and new skills that can pay off in personal business progress.

Many communities invite the services of their local contractors, engineers and architects. Some, for example, believe their school board or school building committee will plan more efficiently if one of its members is in construction as an engineer, contractor or architect. They have learned from experience that their schools will be less expensive, and at the same time more effective when the advice of construction people is available.

And these school boards or building committees don't expect a discount either. The savings result from the planning advice given by men who know construction best.

This kind of community activity can lead to new business. And there is little need to fear conflict of interest. Contractors will still have to bid in competition with other firms. Architects' and engineers' designs and professional standing will still get the same scrutiny from government officials.

But having been part of the original discussions you'll have a fuller understanding of what's wanted and needed. With this knowledge, your bidding can be more accurate. Your designs will be closer to the desires of the community.

The largest cities and the smallest towns must operate in a fishbowl. Cities have their public hearings. Some communities still retain the town meeting. But whether it's a hearing or a town meeting, the actions and thinking of public officials must be exposed to public view. Hearings are one means of gaining information you can use in your business planning.

• Publicity helps—Don't overlook the value of publicity either. You might have to learn a little about the needs of newspapers, but the process of trial-and-error eventually will lead to a picture, a story, or both.

You have a lot working in your favor on this score. Construction is news because it has an impact on the community pocketbook.

If you design a school, the people who pay for it want to see what it will look like before it's built. A drawing of the structure has news value. If it's a new library, a new city hall, a new courthouse, the same holds true. Few news editors or city editors will turn down first offering of such a picture.

Private construction also has its impact on the community. If a new factory is going to be built, it will mean more jobs and more income. The factory is news, too. So check with your client to see if he is willing to release a picture or a story to the papers. If he is, remind him to mention you as contractor, engineer or architect.

Once a construction project is started, a contractor's opportunities for news coverage expand. Construction is dramatic. It involves great height, unusually long trusses, or the "heaviest" or the "biggest" something. Naked steel framing offers picture possibilities. You don't even have to take the pictures—usually the newspaper will. All you have to do is tell the editor what's going to happen on your job in the way of construction. Tell him in advance. A short letter or a phone call will do the trick. But if you write, describe what the picture or story consists of. If you call, chances are the editor or reporter you speak to will ask the questions and develop the story or picture from your answers.

Planning ahead is one of the most valuable assets when it comes to pictures. The rewards can be plentiful.

For example, one large contractor holding the construction contract for a new office building in Connecticut knew that on a certain day a gleaming, stainless steel stack more than 100 ft long was due to be shipped from a manufacturing plant in Pennsylvania. It was going to be trucked over a route carefully planned and carefully timed. This lengthy, awkward burden on the highways made a picture possibility.

The contractor notified newspapers in towns and cities through which the stack would pass and told them the scheduled arrival time in each. The idea clicked. A picture was printed in half a dozen papers along the route. And in every case the general contractor's name and the building were mentioned.

Such methods won't guarantee contracts every time you bid a job, but there is an intangible value in getting your name before the public.

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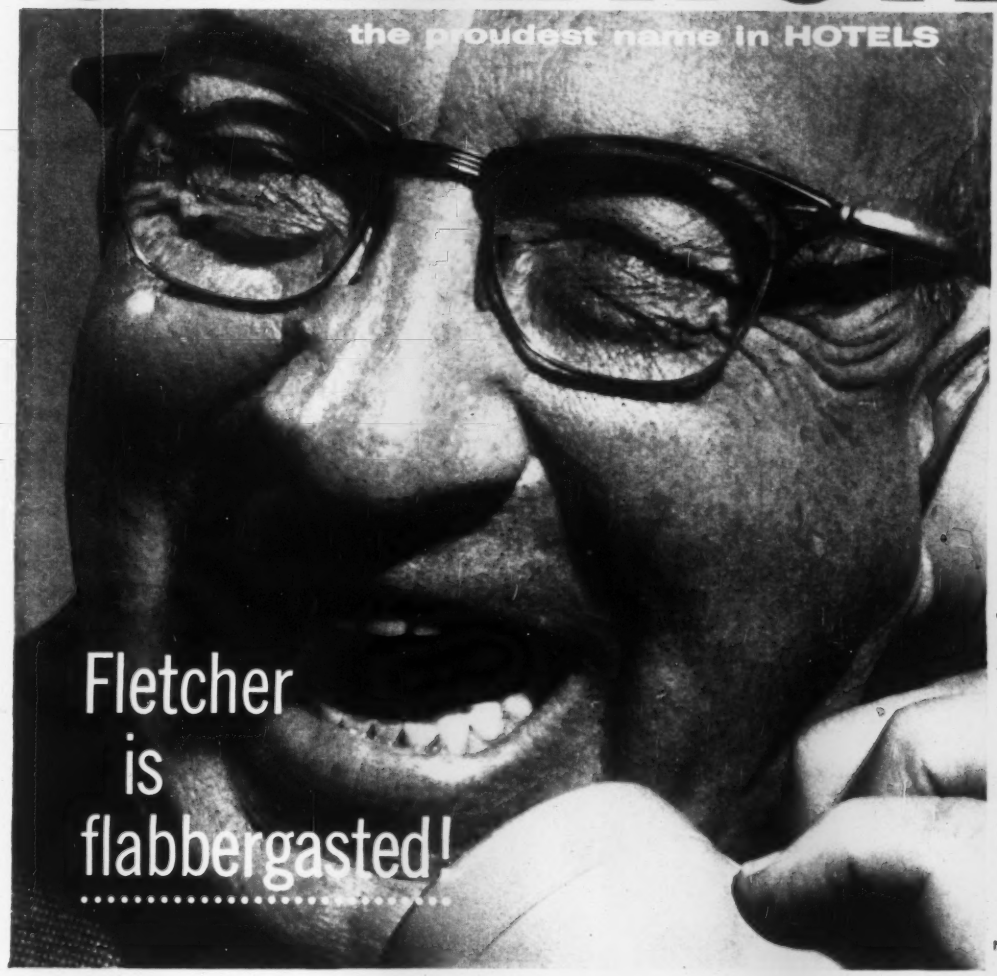

Which of these 39 cities is your next stop?

EAST
NEW YORK
BOSTON
WASHINGTON
PITTSBURGH
BALTIMORE
PHILADELPHIA
PROVIDENCE
ATLANTIC CITY
SPRINGFIELD, Mass.
ALBANY
ROCHESTER
BUFFALO
SYRACUSE
BINGHAMTON, N.Y.
(opens early 1959)

MIDWEST
CHICAGO
DETROIT
CLEVELAND
CINCINNATI
ST. LOUIS
OMAHA
AKRON
INDIANAPOLIS
FRENCH LICK, Ind.
RAPID CITY, S. D.
SIOUX CITY, Iowa
SIOUX FALLS, S. D.
CEDAR RAPIDS, Iowa

SOUTH
LOUISVILLE
DALLAS
(opens early 1959)
AUSTIN
MOBILE

WEST COAST
SAN FRANCISCO
LOS ANGELES
PASADENA
PORTLAND, Oregon
(opens fall 1959)

CANADA
MONTREAL
TORONTO
NIAGARA FALLS, Ont.
HAMILTON, Ont.

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Wages Up but Labor Costs Down?

- **Long-term contracts and labor's approach to the nation's economic problems will continue to push wages higher.**
- **You can expect management and labor to concentrate on cutting indirect labor costs, rather than on wages or fringe benefits.**

The trend of labor costs in construction now is more optimistic for both labor and management than it has been in many years.

This sounds perhaps like a paradox. But an analysis of what has been happening in the last 12 months seems to justify these predictions:

• The hourly wage scales of construction workers will continue to rise for some time to come—probably by another 15 cents this year.

Industry's concern over rising labor costs will become a stabilizing factor of increasing significance—not as an immediate damper on hourly wages but as a catalytic agent that will reduce unnecessary labor costs.

• **New signs**—The latest indication of this trend came last month, when leaders of the AFL-CIO building trades unions met in Miami Beach.

One unionist, when asked what the meeting added up to, replied: "It seems to mark a turning point in the thinking of the international unions. We are now pretty unanimous in our concern over the effects of high labor costs. The losses they cause our contractors are also our losses."

This concern is drawing labor and management closer together. Their common stake is simple but crucial: Job opportunities.

These are being affected by high costs in several ways. Union contractors and building trades unions are being put at a disadvantage in fighting the inroads made on construction work by industrial union and force account workers; some construction consumers are postponing or dropping their construction plans; and the nonunion workers are now finding it easier to take jobs away from union building tradesmen.

Largely as a result of this joint and mutual concern, there were two potentially significant cost developments at the meeting.

One was an agreement between the country's leading national contractor associations and the international building trades unions to set up a joint study committee to explore the possibility of devising ways and means to solve common problems. The other was a pledge the international unions gave the National Constructors Association to help make the "Ten Commandments" (a cost-saving work practices code) more effective at the local level.

Ultimate success of both actions depends, of course, on the receptiveness of local employers and local unions, both of which are autonomous.

• **The wage picture**—Neither action, however, is aimed at cutting or holding down wages.

Contractor and union officials directly involved in the "Ten Commandment" pledge, for example, say it "strikes out at featherbedding, slowdowns, jurisdictional disputes and other practices" but "does not affect basic wage rates or working conditions."

It is difficult, if not impossible, to check or reverse the upward trend of wages, although even some union leaders feel the point of no return is fast approaching.

The construction industry has, in fact, already agreed to perpetuate the upward trend in wages.

It has added about 15 cents an hour to construction wages each year for several years, and also set the wage increases for one, two or three years ahead.

This has been done through long-term labor contracts signed in an effort to achieve some stabilization of costs.

Under those contracts, the average deferred wage increase effective this year will be 13.7 cents an hour; in 1960, it will be 12.6 cents.

Complementing this strong upward pressure are two other strong factors—one human and one union.

The first is the desire of all workers to catch up with the Joneses.

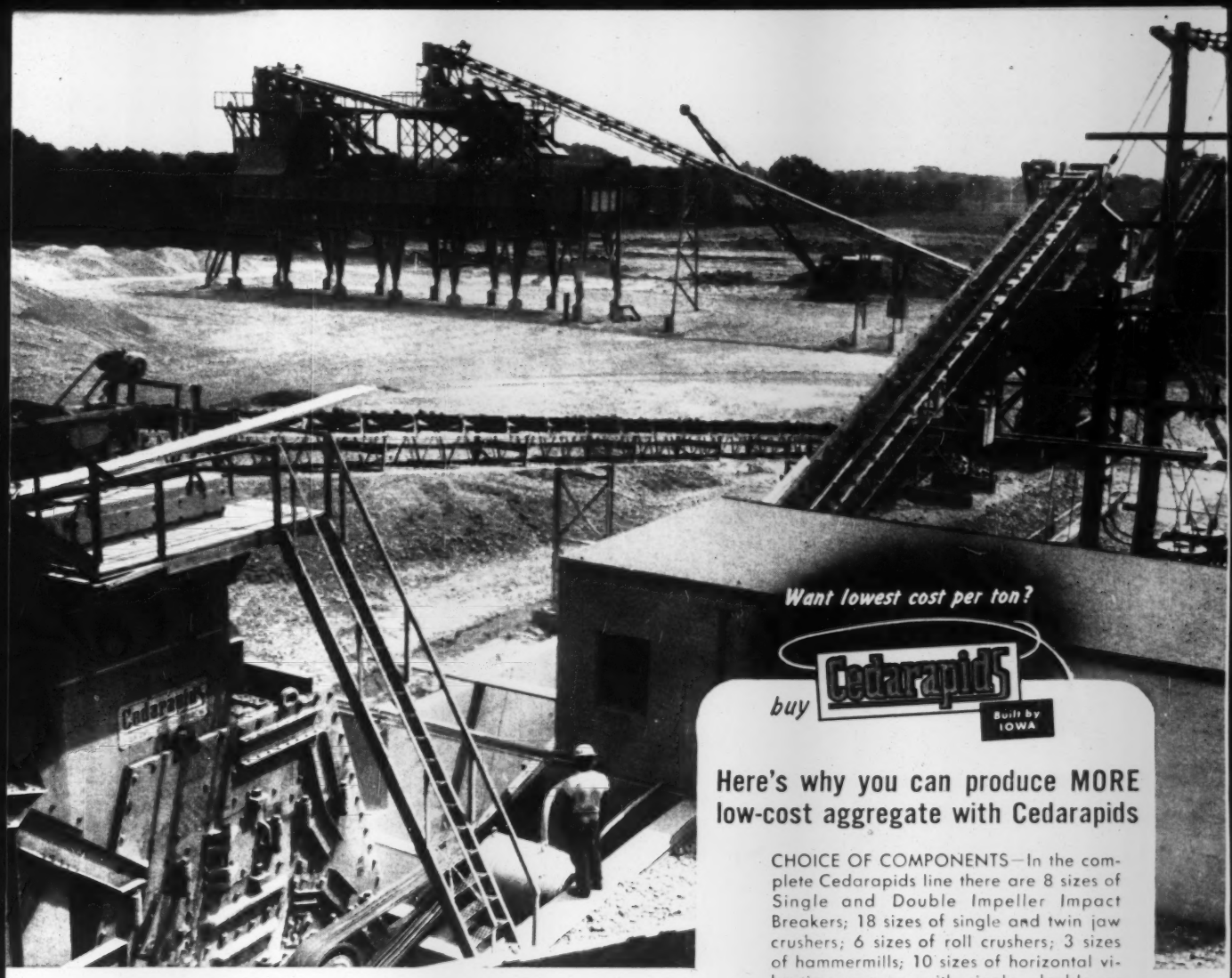
The second bolstering factor is this trade union economic philosophy espoused by the AFL-CIO: Constantly increasing wage levels are necessary to produce the purchasing power essential to economic recovery and expansion.

• **Opportunities unlimited**—These help to explain why the big attack on labor costs will be channeled into efforts to reduce unnecessary labor costs rather than to keep wage rates down.

But even under this approach the challenges and opportunities—in addition to the "Ten Commandments"—are almost unlimited. Many of these fall into the area of collective bargaining.

Full use has not been made, for example, of such cost-saving devices as installment payment of annual wage increases, uniform contract expiration dates, off-season bargaining, jurisdictional disputes clauses, safety provisions, flat sums instead of percentages for fringe benefits, advance preparations for bargaining and area-wide or multi-employer bargaining.

At the same time some contractors seem to be overlooking a good opportunity, afforded by the Mountain Pacific case and unemployment, to keep costs down by getting the most competent craftsmen available.



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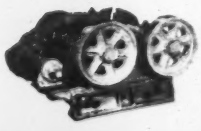

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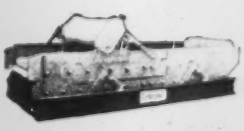

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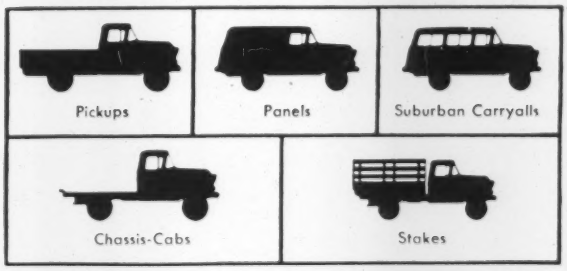
This new Chevy unit is the latest thing in 4-wheel drives. Consisting basically of a rubber-mounted power divider with precision-engineered front axle, it distributes power evenly to front and rear axles. And when the going is extremely difficult, it directs power to whichever axle is getting the best traction. Result: Your load goes through, whether the road does or not!

CHEVROLET 4-WHEEL DRIVE SUITS MANY MODELS



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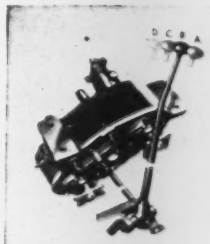

One easy motion operates the power divider. Shifting between 2-wheel drive and 4-wheel drive can be done whether the truck is stopped or moving. Lever has these 4 positions:

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- **b.** Neutral
- **c.** 2-wheel direct
- **d.** 4-wheel direct

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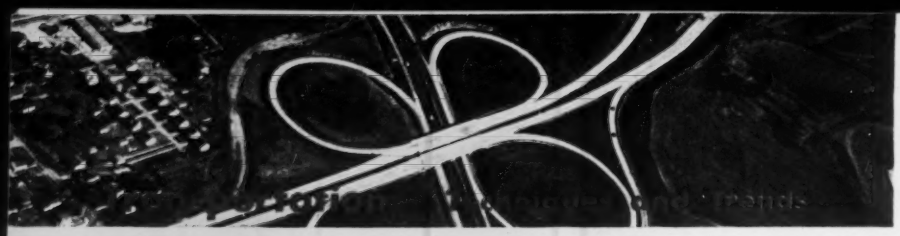

Is a National Transportation Policy

- **Highways still hold the spotlight as the road program keeps rolling. This year should see really big results.**
- **Now the highway program is being related more frequently to urban problems, to mass transit and railways—at least in discussions.**
- **Commercial jets have brought a race to get the nation's airports ready. This is the first year of a four-year push to get the job done.**

There's a definite trend toward thinking big about transportation and its problems. All through 1958 the big picture was being sharpened. It will be pushed even more through 1959.

The evidence lies in statements like these:

- "We need over-all transportation agencies for metropolitan areas . . ."
- "The automobile is today's greatest influence on planning . . ."
- "The national highway program won't solve traffic problems in the cities of the U. S. . . ."

And the words are accompanied by some action.

Pushing for establishment of a national transportation policy are at least three agencies: The Committee for Economic Development, Engineers Joint Council and the National Academy of Sciences-National Research Council. This last group has urged its Highway Research Board to consider not just highways, but all transportation—the big "problem." Recognizing cities as the crux of the nation's transportation problem, it proposed a Transportation Research Board and an Urban Research Board.

The transportation problem is generally being related to the urban problem. The American Society of Civil Engineers had its highway and city planning divisions in joint session last October to stress "the absolute interdependency of highway planning and city planning."

State highway departments are being urged to get staff men qualified to work with city planners. A study of the Pennsylvania Highway Department by the Automotive Safety Foundation recommended effective development of urban transportation plans through establishment of an "urban coordinator" in the department.

The Texas Highway Department has a separate new division for planning and design of the $60 million worth of urban highways it does annually. Half the Interstate routes in Texas are in urban areas. And transportation leaders are at last relating to railways.

"We just can't depend on rubber-tired vehicles. We believe a balance between highway and rail transit facilities will prove to be most economical," says Philadelphia's deputy managing director, John Bailey.

But what of accomplishment? What is the situation today and where are we headed in design and construction of the nation's roads, airports, railroads and waterways?

- In highways, the federal-aid program got rolling in 1958, with half again as much work under construction at year's end as there had been a year before. The program is on schedule. And 1959 will see even more highway construction.
- In airports, a billion-dollar price-tag now hangs on the construction job that will prepare airports for commercial jet traffic. No U. S. airport is fully equipped to handle the jets today; but 27 airports will be made ready in the next four years.
- Railroads—most of them safely back from "the brink of bankruptcy"—are thinking in expansive terms (for them). There is hope for profits in 1959—and for a return to maintenance, repair and construction. Deferred work must be done if rail traffic picks up. And it should.
- Waterways will include in 1959 the completion of the St. Lawrence Seaway into the Great Lakes and harbor construction in Great Lakes ports. But this lake-port construction will be more than matched in the big East Coast cities (New York, the prime example), which must now fight the Seaway's competition. (See water resources review on p. 124.)

In airbases, missile facilities have stolen the construction spotlight from bomber runways.

In rapid transit, there are plans to convert railroad lines to commuter-hauling rapid transit; and the monorail goes to Disneyland.

In bridges, aluminum has arrived—and will show up again in 1959 in rolled shapes, if not in the new sheet fabrications. High-strength steel has also arrived.

Here's a more detailed rundown on the transportation situation right now, and what to expect in 1959 in roads, bridges, airports, airbases, railroads and rapid transit.

- **On the highways: speedup**—The "greatest public works program in history" had resulted at year's end in the construction of 2,336 miles of the 41,000-mile Interstate Highway System. Another 2,365 miles of finished highways (mostly tollroads) had been taken over as part of the system for a total of 4,701 miles recorded as having been finished.

And 1959 will be a bigger year for contracting out the work. The nearly 20% of expenditures that went for engineering and right-of-way acquisition in 1958 should be reduced this year; more of the total should go into actual construction. That total for all highways should be $7.1 billion—up from $6.2 billion.

But Interstate construction needs still more money. The cost was re-estimated

Coming? The Need Is Here Now

BRIDGES—California's new Carquinez Bridge, near Vallejo, is a duplicate of the older span, at left. Use of high-strength steel made it possible to finish the new bridge ahead of schedule. Now that it is finished, it will handle traffic while the older span is widened.

early last year as $39 billion (instead of $27.5 billion). The states and the federal government are concerned over ways to raise their shares (federal, 90%; states, 10%).

At least a dozen states are considering higher gas taxes. And so is the federal government. The choice for the federal government: Either raise user taxes to continue pay-as-you-go financing; appropriate from general funds; or stretch out the program. The last-mentioned seems unlikely as debate continues.

The road program got an added shot in the arm when the Highway Act of 1958 made available $2.5 billion of fiscal 1960 for immediate apportionment to the states for Interstate work. There was a $900-million jump in funds (as well as a six-month gain in time). Under the Highway Act of 1956, only $1.6 billion would have been available; the pay-as-you-go limitation was suspended for fiscal 1959 and 1960.

Also helped by the recession-inspired 1958 legislation were the federal-aid primary, secondary and urban highways —known as ABC roads[e] and traditionally financed on a 50-50 federal-state basis. Authorized funds for 1960 and 1961 were boosted, but the immediate effect came from apportionment to the states of an extra $400 million for 1959 on a two-for-one matching basis. That money had to be put to contracts within six months.

Competition for the highway construction work was fierce last year and it will probably continue to be so this year. The states, with Bureau of Public Roads encouragement, have been dividing the work into small pieces on which more and smaller contractors can bid; 95% of contracts go for under $2 million, and most are between $100,000 and $1 million. The big contractors now have to compete with the little ones.

The proposed reimbursement to builders of tollroads on the Interstate roads remains a moot question. It's a $6-billion question; that's the approximate price involved.

Even as the future ownership of the tollroads is debated, the end of the tollroad era has arrived. A $441-million system being completed around Chicago may be the last of them. The first tollroad, the Pennsylvania Turnpike, celebrated its twentieth anniversary last year; its prime concern is figuring how it can fit into the Interstate System.

BPR continued in 1958 to spell out design standards for the Interstate system: Controlled access, of course. Frontage roads, to be avoided. Complete lighting, uneconomic. Fences, where needed. And on signs, a detailed stand-

FREEWAYS—Los Angeles' recently completed Harbor Freeway is typical. It's estimated that two-thirds of downtown Los Angeles is devoted to streets, freeways and parking lots.

ard for road markers and a small bonus to states excluding billboards from new rights-of-way.

• **Faster, faster**—The marked trend toward mechanization of highway design processes continues—seems, in fact, to be approaching an ultimate. In Indiana last year 11 miles of Interstate were designed in 16 weeks (ENR Sept. 25, 1958, p. 42).

The missing link in design-process mechanization has been invented—and named Oscar, or AUSCOR for automatic scanning correlator. It can do electronically what operators of stereoscopic plotting machines have been doing—find ground elevation from overlapping aerial photos. This it can do 40 to 100 times faster than man and with greater accuracy.

Oscar's speed makes practical an unlimited number of highway alignment and profile—and more nearly assures finding the route with the smallest earthmoving costs. A 1 to 2% saving is foreseen.

Oscar makes practical the digital terrain model (broad strip map expressed in digital form) and thereby fully mechanizes the process from photogrammetry to route location and cross-sections.

As this mechanization has increased in scope, the number of programs available has grown appreciably. There are now 212 programs in BPR's computer program library. Of these, 99 are in highway location and design; 69 are in the structural field; 11 are in traffic; and the remaining 33 pertain to problems in soils, hydraulics, quantities, costs, bid analysis, trigonometry and geometry.

Forty-two states now have computers. An even larger number of consulting firms use the electronic devices.

• **Engineering aplenty**—Gone now are the worries that the road program would be delayed by a shortage of engineers. The computer—which mechanizes design—cuts down on the number of engineers needed. And the state highway departments for the most part have been successful in hiring needed engineers and technicians.

This build-up of engineering help within the highway departments is hard on consultants in the highway field. This will be a big year in highways for everyone but the consultant—as a group. Last year, 41 states reported using consulting firms, but this use was almost negligible in some states.

BPR raised the question of fees for highway consultants. The American Road Builders Association, American Association of State Highway Officials and the American Society of Civil Engineers all considered the fee question, and ASCE came up with new recommendations. But whatever the fees,

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U. S. HIGHWAY 40—California is rushing construction of U. S. 40 to make it ready to carry traffic to the Winter Olympics at Squaw Valley next year.

there just won't be as much highway engineering for consultants as was once supposed.

• **Paving methods improved**—A traveling form paver (known also as the "slip-form paver") was used to place unreinforced portland cement concrete pavement on a cement-treated base for a length of Colorado's Interstate. Result: the smoothest pavement ever placed in the state (roughometer rating of 80 in. per mile, opposed to 100 in. per mile for comparable roads). The paver put down about 1,600 ft of 24-ft pavement a day. It was 8 in. thick with a 4-in. subbase.

Later in the year Colorado tried the slip-form paver on reinforced concrete pavement and found it saved 25 to 30 cents per yd.

And at Mansfield, Ohio, a paving contractor used an 8-cu yd mixer (two or four times normal size) to good advantage.

• **Test road now under test**—The AASHO Road Test, a $22-million highway research project at Ottawa, Ill., entered its research phase in 1958. Trucks are now rolling over the test pavement, and a wealth of scientific data on pavement performance is being collected.

Sponsored by the American Association of State Highway Officials, the test is being administered by the Highway Research Board.

Present plans call for the test traffic to operate until the fall of 1960. Final reports will be published sometime in 1961.

The test pavements, built in six loops, contain 836 test sections representing nearly 200 different structural designs and covering a wide range of thicknesses. Half of each test loop is portland cement concrete and half is asphaltic concrete.

More than a million dollars worth of electronic and mechanical instruments are being used to collect and record data. High-speed computers will analyze the huge mass of data at the project site and at nearby universities. Programs for these have been prepared during the past year.

The early phases of test traffic produced expected distress sooner than anticipated in some of the thinner pavement sections and in some of the 16 test bridge spans included in the project. Four spans, designed at stress levels that approximate the yield point of the steel in the beams, have failed and are out of the test. Some pavement sections have also been removed from the test.

Test traffic will continue this year and will be analyzed as it is collected. The project staff also will begin assembling all pertinent information on the test in formal reports.

• **Bridges: Aluminum's bid**—Last September the world's first welded-aluminum-girder highway bridge went into service in Des Moines. It's a developmental project undertaken by the state's highway department with cooperation of the Aluminum Company of America, Kaiser Aluminum and Chemical Corp., and Reynolds Metals Co. There are 75,000 lb of structural aluminum in the four-span structure; it is 222 ft long and 36 ft wide.

The Des Moines bridge is sure to be followed by others. Two simple grade separations on New York's Long Island Expressway have already been bid to be built in structural aluminum—riveted, not welded.

And another advance in aluminum to watch for this year will be the fabricated sheet metal bridge. Two designs were tested last year.

At Lehigh University BPR worked with Alcoa, Kaiser, Reynolds and Olin Mathieson Chemical Corp. on fabrication and testing of a design by Fairchild Engine and Aircraft Corp. Metal ¼ in. thick was formed into hollow triangular sections stiffened by extruded ribs, making beams 550 ft long.

At New York University a design in light-gage aluminum used arch-shaped sections and beams up to 60 ft long. The Alabama Highway Department may try the first practical application of the design sometime this year.

• **And other materials**—High-strength steel is vying with aluminum as a bridge material. Its lower weight makes possible faster construction. Its weldability was established last year when California's Carquinez Straits Bridge was completed ahead of schedule despite

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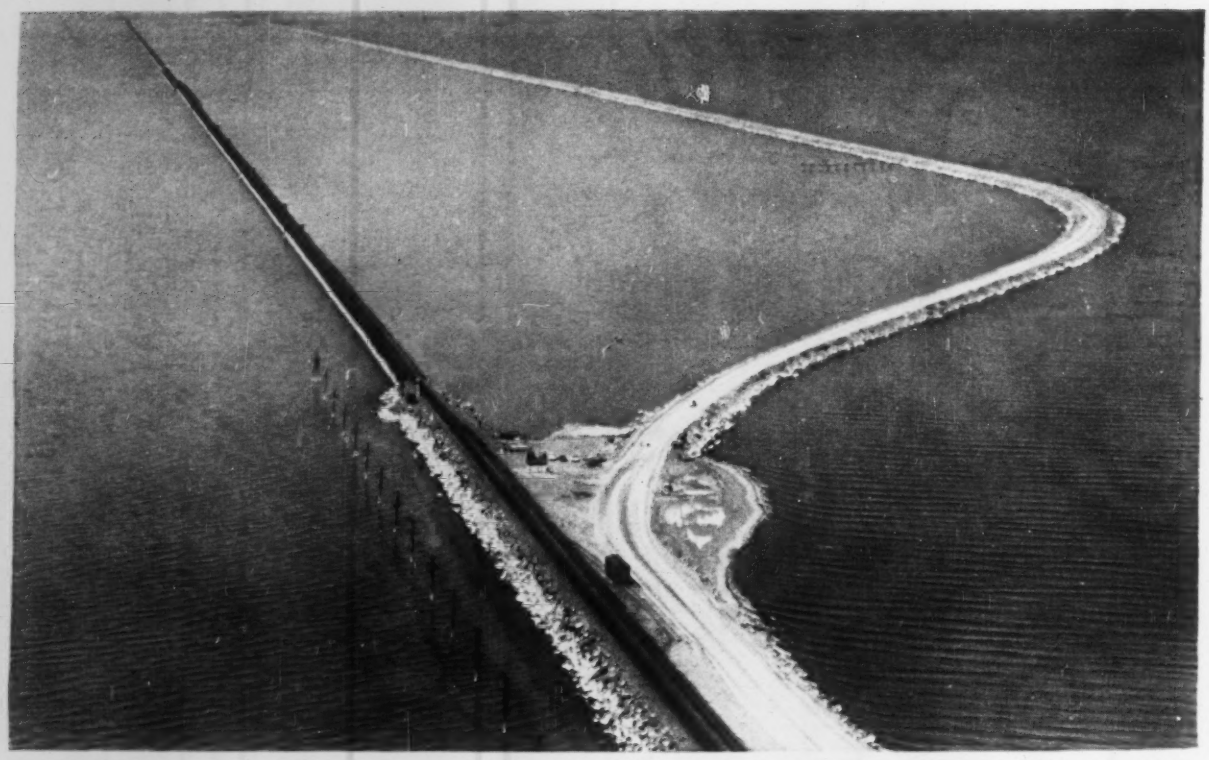

SALT LAKE FILL—The nation's biggest railroad construction job going on now is the new fill across the Great Salt Lake for the Southern Pacific Railroad. Work on the $49-million project is almost completed. Fill will replace wooden trestle (left).

minor weld defects, found and corrected (ENR Sept. 4, 1958, p. 42).

And prestressed concrete continues to share the spotlight as a bridge material. Two prestressed concrete highway crossings with 320-ft spans are under construction over an arm of Oneida Lake near Syracuse, N. Y.

In the timber field one manufacturer of wood products unveiled a package bridge. Such standardization is a worthwhile objective in the small bridge area, and 1959 could see more of them—in different materials.

Some 375,000 bridges must be built on and off the federal-aid system, reports BPR's H. A. Radzikowski. A saving of 1% in the cost of these—through standardization—could net $320 million, he believes. He talks of investigations into standard bearing shoes, expansion dam devices, curbs, railing, drainage details, pavements, pier types and utility provisions.

• **The big bridge news**—Biggest bridge headlines last year went to the Second Narrows Bridge at Vancouver, B. C.; the start of construction of a new Firth of Forth crossing (see p. 96); and establishment of the Narrows Bridge's record-breaking span at 4,260 ft (p. 80).

The $16-million cantilever-type structure at Vancouver broke no records. It made news when two uncompleted spans fell during erection last June and took 18 workers to their deaths. A report blamed buckling of steel in a grillage under falsework. It blamed the buckling on absence of stiffeners due to an error in calculations.

• **Airports get set for jets**—The shape of things to come in jet airports can be seen at Chantilly, Va., where a new international airport is under construction. It will serve Washington, D. C. The $100-million Chantilly project should be a model for the jet age. It is surely to be the first jet airport built from scratch.

New York is spending $150 million on its International Airport (Idlewild).

And in Chicago the improvement of O'Hare Field will cost $120 million.

At Indianapolis Municipal Airport, superelevated, high-speed turn-offs were completed last year, along with flush centerline runway lights. A reinforced concrete runway, 7,300 ft. long, was given three of the quick turnouts, designed to permit planes to leave the runway at 63 mph. The flush centerline lights were installed experimentally on one of the turn-offs. The Federal Aviation Agency's Technical Development Center is testing their effectiveness as a nighttime aid to the pilot. (Experiments on high-speed turn-offs and flush centerline lighting are also being conducted at Dow Air Force Base, Bangor, Me.)

As the big international airports stretch their runways toward the still-disputed 11,000-ft (sea-level) length proposed for jets (pilots would like 13,500 ft) there remains another measure of construction to be done at U. S. airports. According to one report, 1,255 different airports need some kind of improvement.

The federal government will aid these improvements provided they meet standards set last year by CAA.

Now in the works in Congress is a $575-million airport-aid bill. But that's far more than the President's new Federal Aviation Agency wants. (FAA succeeded CAA and the Airways Modernization Board, under 1958 legislation.) If it's passed, a veto is likely.

• **Airbase pavement**—This year may see the return of asphaltic concrete to the bomber runway—that is, to the portions outside a 75-ft center strip and within 1,000-ft lengths of either end. These must still be portland cement concrete, says the Air Force.

Airbase pavement in portland cement concrete made news in 1958 when a record rate of 7,900 cu yd per 14-hr

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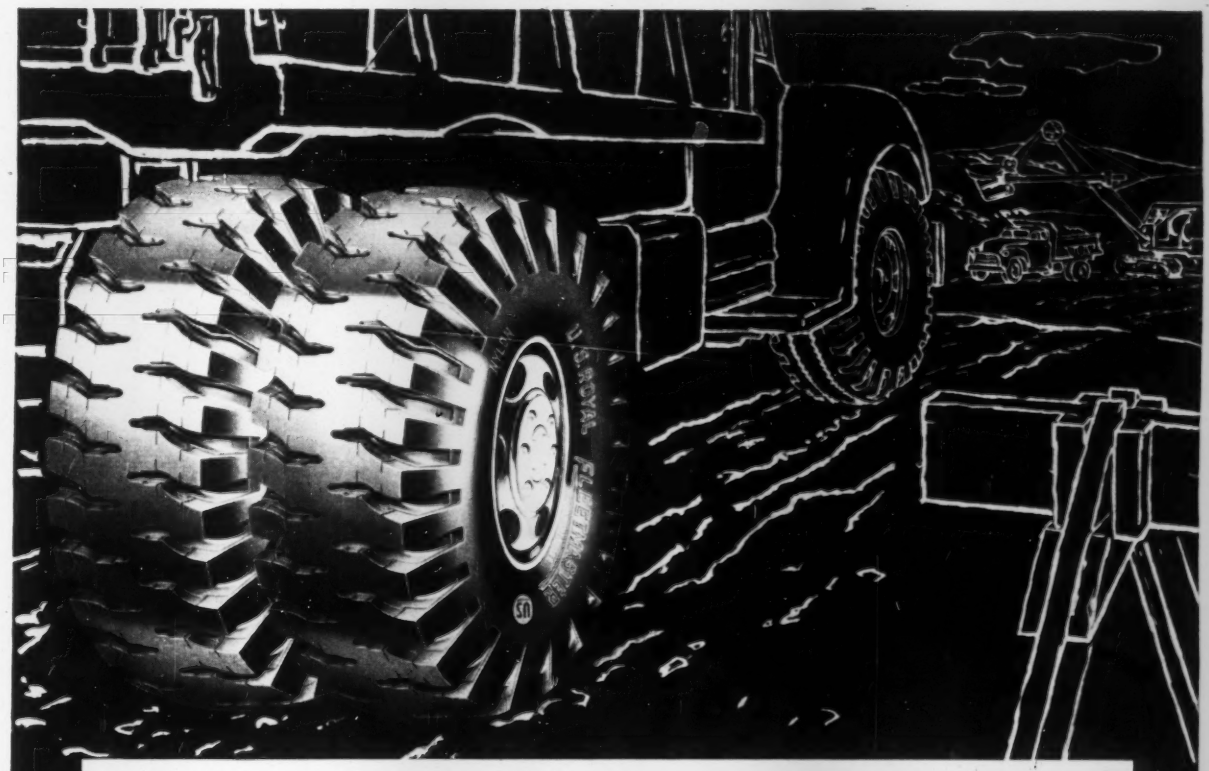

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White Oak Excavators meet the deadline at Hogback Dam:

Texaco Plan lets White Oak lube

THESE SIX TEXACO LUBRICANTS, shown here with White Oak Excavators' Vice President, John Toffolon, and H. F. Porter, Texaco representative, permit their rig to lubricate *all* major equipment.

Contractor reports Texaco Simplified

RIVERTON, CONN.—White Oak Excavators, contractors for Connecticut's Hogback reservoir dam, have found that the Texaco Simplified Lubrication Plan makes their truck-mounted lube rig more useful than ever before.

"The Texaco Plan is really essential to getting the best use of our lube rig," says John Toffolon, one of White Oak Excavators owners. "Our Texaco Plan calls for just six lubricants to handle everything on the spread. We can take our whole lubricant inventory right out into the field. That's especially important to us because we use equipment made by practically every manufacturer."

Using no more than six lubricants on this $4,225,000 project has other advantages, too. For example, smaller inventory (six lubricants instead of 15 or 20) means less

HOGBACK PROJECT involves an earth and rock-fill dam to supply water for the greater Hartford, Conn. area. It is 135 feet high and 800 feet wide, and will create a 6½-billion gallon reservoir on the west branch of Connecticut's Farmington River. The dam is designed to discharge 92,000 cfs. It also has a 3 mile tunnel to the Barkhamstead reservoir, and a diversion tunnel designed to carry flood waters up to 31,500 cfs. White Oak Excavators are moving about 600,000 yards of gravel, earth and sand; 500,000 yards of rock; 95,000 yards of impervious soil core; and 30,000 yards of concrete. This requires a full range of construction equipment, all fully protected by the six lubricants comprising the Texaco Simplified Lubrication Plan.

rig handle all field lubrication

Lubrication Plan "essential to best use of lube rig"

handling, less storage space, less chance for misapplication. And, of course, the Texaco Simplified Lubrication Plan developed for the Hogback project comprises lubricants specifically chosen to meet the requirements of that particular job.

Here are the six lubricants, shown at the left with Mr. Toffolon: (1) For engines: *Texaco Ursa Oil Heavy Duty;* (2) for chassis, wheel bearing and general grease lubrication: *Texaco Marfak Multi-Purpose 2;* (3) for hydraulic units: *Texaco Regal Oil R&O;* (4) for transmissions and differentials: *Texaco Meropa Lubricant;* (5) for wire rope and open gears: *Texaco Crater;* (6) for track rolls: *Texaco Track Roll Lubricant.*

You'll save time and money by letting a Texaco Lubrication Engineer work out a Simplified Lubrication Plan tailored to the specific requirements of your project. Just call the nearest of the more than 2,000 Texaco Distributing Plants, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

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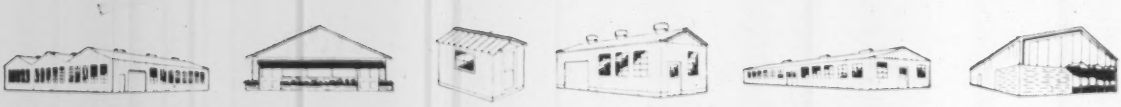
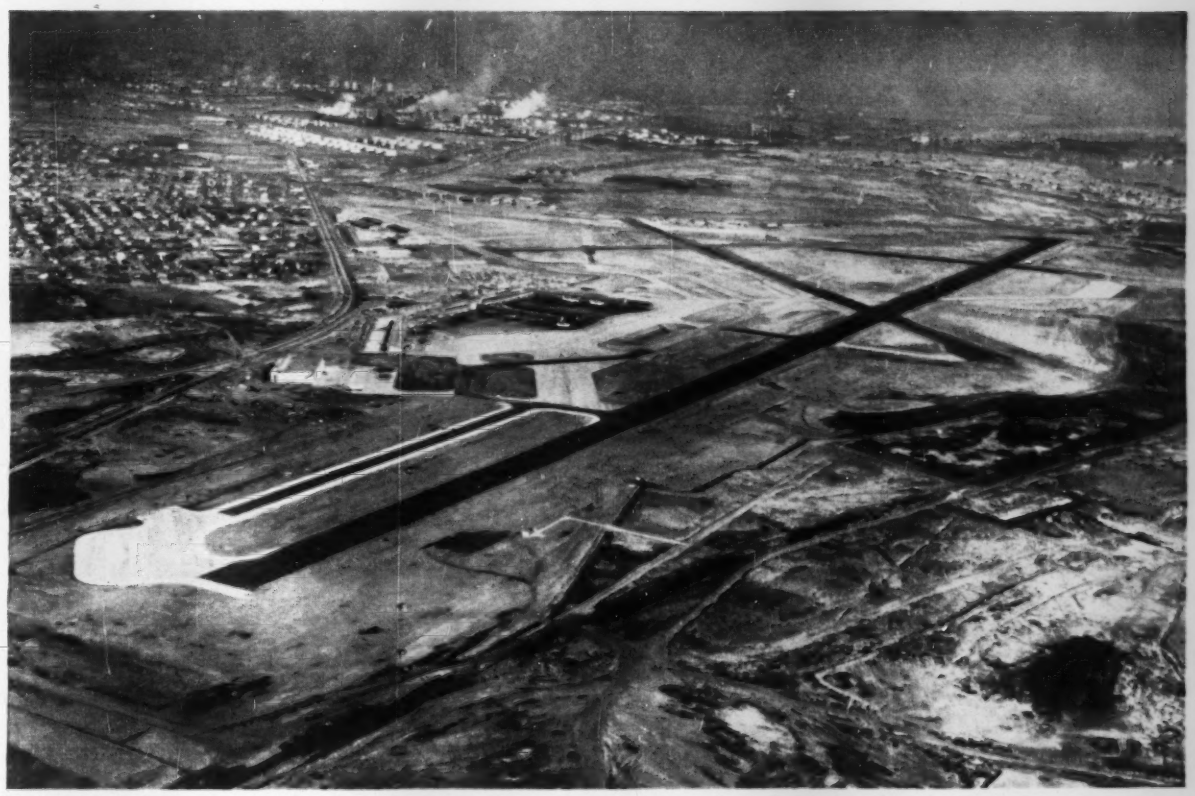




AIRPORTS—Philadelphia International Airport, like other major U. S. airports, is enlarging its facilities and lengthening its runways to accommodate commercial jet aircraft. It is estimated that 1,255 of country's airports need some kind of improvement.

day was placed at Beale Air Force Base in northern California. The contractor achieved this daily concreting rate (it sounds more like dam construction than paving) by using lots of big equipment.

• **Missiles move in**—The ballistic missile base will obviously supplant the bomber runway in interest to the construction man in 1959, or soon thereafter. Missiles are out of the developmental stage, in production; and their bases are under construction now (ENR Jan. 29, p. 30).

The missiles for which bases are being designed and constructed now will be made obsolete by more advanced weapons. New and different bases therefore will have to be constructed later. Whatever else the space-age holds, it will bring a construction bonanza of considerable scale.

• **Railroads and rapid transit**—Unlike neighboring Canada, which is still building railroads and still has hundreds of miles to build, this country's only big current railroad construction job is on a new fill across Great Salt Lake.

Railroads need a rate of expenditure near $1 billion to modernize their lines. They're now spending only about $300 million per year. An 8% increase for rails has been hopefully forecast for 1959.

The railroads weathered the recession partly by cutting back maintenance of way. They cut such construction expenses (charged as current rather than capital expenses by their accounting systems) by 16%. Such "savings" are not likely to be repeated in 1959.

Rapid transit schemes are coming to life in some cities, to fruition in others. Boston has taken over and is converting to rapid transit use a 9.4-mile line formerly belonging to the Boston & Maine Railroad. Philadelphia has a $25-million plan for extending high-speed rail transportation from midtown into Camden, N. J. It would convert Pennsylvania-Reading Seashore Lines tracks in New Jersey into a commuter line to cross the Delaware on the Benjamin Franklin Bridge.

Rapid transit is emerging as perhaps the greatest need in the San Francisco Bay area. The area's new Rapid Transit District promises a "revolutionary new era . . . ready for public presentation" before the end of 1959. And Chicago plans a four-road expressway that would have rapid transit tracks as its central divider.

In Southern California, there is only talk of rapid transit—the masses still move by auto. But while the Los Angeles monorail system remains a dream, Walt Disney is putting one up at Disneyland.

• **Blue sky stuff?**—This year won't bring complete refinement of the techniques, but you'll be hearing more about such things as:

• Electronic highway devices, such as sound and visual signals for auto safety and control.

• More electronic bid analysis—although we will not get the ultimate in uniform coding of cost data.

• Colored aerial photography—even though its present uses seem more geochemical and geobotanical than they do engineering.

You can expect more computer programs; new talk of rapid transit without operators; new monorail proposals; the spectacular tunnel and causeway crossing of Chesapeake Bay; and a start on the long-delayed Narrows Bridge from Brooklyn to Staten Island.

It's an expanding year in transportation.

SIX-LANE EXPRESSWAY, flanked by service roads, on the south side of Austin, Tex., is part of the 14-mile controlled access expressway system serving the state capital. Texas will award $300 million worth of highway contracts during 1959.

New England

• **Massachusetts Transit Authority**—Work was begun in mid-1958 on the $8.6-million Boston rapid transit system. The route will run 9.4 miles along Boston & Maine Railroad track from the center of Boston to Newton. The system will be the first attempt by a city to convert a non-paying railroad line into a rapid transit facility.

• **John F. Fitzgerald Expressway**—A 2,400-ft, $26-million tunnel was partially opened on the Fitzgerald Expressway in Boston. In places the tunnel is some 200 ft wide and carries two three-lane roadways. The expressway, four miles in length, has both elevated and underground sections.

• **East Providence Expressway**—Work is about 33% finished on the 2½-mile, six-lane, divided highway that will serve as a tie-in with the North-South Freeway to link Providence and the Southern Massachusetts Expressway. Construction has been started on the 14 bridges that are part of the $9-million project. The route will be completed by December.

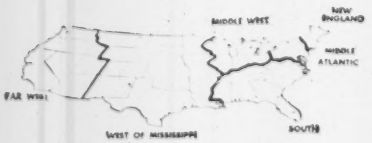
• **Davisville, R. I., Navy Pier**—The 896,000-sq ft deck pier completed last year at the U. S. Naval Construction Center almost doubles the waterfront capabilities there. It is 1,450-ft long and 652-ft wide and contains 56 sheet-pile cells.

• **Connecticut Turnpike**—The entire length of the 129-mile, $445-million Connecticut Turnpike was completed early in 1958. The Mianus River Bridge, at Cos Cob, was opened for traffic in August. The all-welded bridge, which cost $5.5 million, extends for more than a half-mile. The center span girders are 205 ft between supports, with two 45-ft cantilevers.

• **Massachusetts Expressway**—Contractors began work in December, 1958, on the 26-mile, $135-million expressway that will replace Route 6. It will tie in with the Rhode Island interstate system and be part of a link between Providence and Cape Cod.

Middle Atlantic

• **Arthur Kill Bridge**—Connecting Elizabeth, N. J., and Arlington, Staten Island, N. Y., the bridge is being constructed by the Baltimore & Ohio Railroad to replace a 70-year-old railroad swing span. Its 558-ft vertical lift span, the world's longest, will clear mean high water by 135 ft. The bridge will weigh over 2,000 tons.



The regional breakdown.

• **Cross Bronx Expressway**—New York City's Cross Bronx Expressway, which will provide an improved connection between Long Island and New Jersey. Construction was begun in 1956, but has been hindered by the congestion in the area. A 2.3-mile section between the Bruckner Expressway and Longfellow Ave. has been completed at a cost of $32.1 million. Work on four other contracts having a combined value of $23.9 million is in progress. Completion of the expressway is scheduled for late 1961 or early 1962.

• **Clove Lakes Expressway**—Under construction by the Triborough Bridge and Tunnel Authority, the Clove Lakes Expressway, on Staten Island, N. Y., will connect the Goethals Bridge with the proposed Narrows Bridge. It will be a 12-lane vehicular expressway, six lanes for express traffic and six lanes for local traffic. The $28.5-million, seven-mile route, will be completed in 1960.

• **Throgs Neck Bridge**—The $90-million Throgs Neck Bridge, which will link New York City's Borough of Queens with the Bronx, was 20% complete by the end of 1958. Work during 1959 is expected to bring the bridge to within 60% of completion. The TBTA bridge is scheduled to be finished by January, 1961. The new East River crossing between Locust Point, in the Bronx, and the Clearview section of Queens will relieve the heavy traffic burden on the Bronx-Whitestone

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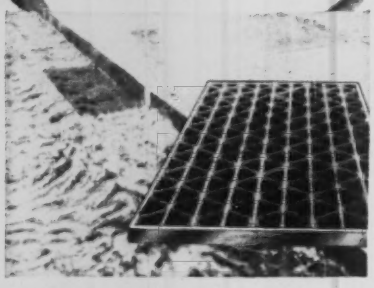

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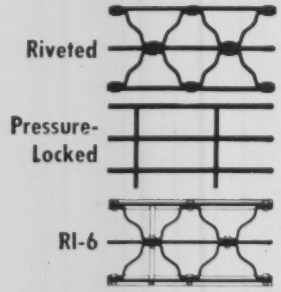

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Bridge two miles to the west. The suspension bridge will have a 1,800-ft main span and two side spans of 555 ft each.

• **Gowanus Expressway**—Work will be completed in 1961 on the TBTA broadening and extension of Brooklyn's Gowanus Expressway. It ultimately will connect the proposed Narrows Bridge with the Brooklyn Battery Tunnel and the Brooklyn-Queens Expressway. The enlargement will provide six traffic lanes and open the expressway to commercial traffic, as well as passenger cars. It will cost $65.5 million.

• **Narrows Bridge**—Work will begin this year on the $320 million Narrows Bridge, which will span the Narrows between New York City's upper and lower bays to connect Brooklyn and Staten Island. It will have a record-breaking 4,260 ft suspension span (Golden Gate Bridge has 4,200 ft) and an over-all length of 2½ miles. The bridge will be financed and built by the Port of New York Authority. It will be purchased by TBTA sometime before 1969. Completion date is set for mid-1964.

• **Brooklyn port**—Pier 2, the widest finger pier in the Port of New York, was put into operation last year. The $5.9-million installation is part of the PNYA seven-year, $85-million redevelopment program for a two-mile section of the Brooklyn waterfront. It is the second of 10 new piers scheduled. Plans call for the completion of three more piers this year.

• **New York International Airport (Idlewild)**—By the end of 1958 work was begun on four airline buildings, four hangars, six aviation fuel tanks, an air mail facility, a commissary, a bank and an office building. The PNYA $275-million redevelopment project, including the 11-block long International Arrivals Building, will be completed in 1961.

• **La Guardia Airport**—Contractors started preliminary work on runway aprons and terminal buildings in 1958. PNYA's $35-million rebuilding program's first phase will be finished next year. By 1965 the airport terminal's central structure will be replaced.

• **Newark Airport**—PNYA is building a $4-million air cargo center at Newark Airport. Begun last year, the center is set for completion in 1960. A $1.7 million control tower is under construction and will be ready this year.

• **George Washington Bridge**—Contracts were let last year for construction of the $182-million, six-lane lower deck and improved approaches to the George Washington Bridge by PNYA. The addition will be finished in 1962.

• **Newark-Elizabeth port**—The first step in the PNYA development of a new marine terminal at Elizabeth, N. J., began last year with work on the shipping channel in the Bound Creek area between Elizabeth and Newark. Some 14 million cu yd will be dredged. The new marine terminal at Elizabeth will cover 703 acres and contain 24 vessel berths. Approximately $275 million will be spent on the two terminals.

• **Long Island Expressway**—By mid-1959 the expressway will be open to traffic from the Queens Midtown Tunnel, the East River crossing to Manhattan, through Queens County to the middle of Nassau County. This will involve 18 miles of the planned 81-mile artery that will run, eventually, to the eastern end of Long Island. A five-mile section from the New York City line into Nassau County was opened in 1958.

• **New York State Thruway**—The New York State Thruway Authority had opened 538 miles of the cross-state system by October, 1958. The final 21 miles of the route are scheduled for completion late next year. The work yet to be done is a 15-mile stretch between Buffalo and Niagara Falls and six miles between Selkirk and the Massachusetts border.

• **Gateway Yard**—A $7.5-million electronic freight yard to serve the New York Central's Pittsburgh-Youngstown district was put into operation in mid-1958. The yard, which has 73 miles of track and a 5,858-car capacity, reduces train-classification time by half.

• **Schuylkill Expressway**—The $75-million expressway, which connects the King of Prussia entrance to the Pennsylvania Turnpike and the northern midtown area of Philadelphia, is 90% complete. It is expected to be finished in late 1959 or early 1960.

• **Philadelphia International Airport**—Bids will be asked in the spring on the extension of the airport terminal. The project, which will cost approximately $2.5 million, will include a new claim baggage area and a new pier. Construction is scheduled to begin during the summer. A 2,216-ft addition to the main instrument runway, giving it an over-all length of 9,500 ft, was completed in December. The enlarged runway is now able to handle jet traffic.

• **Delair Bridge**—Construction began

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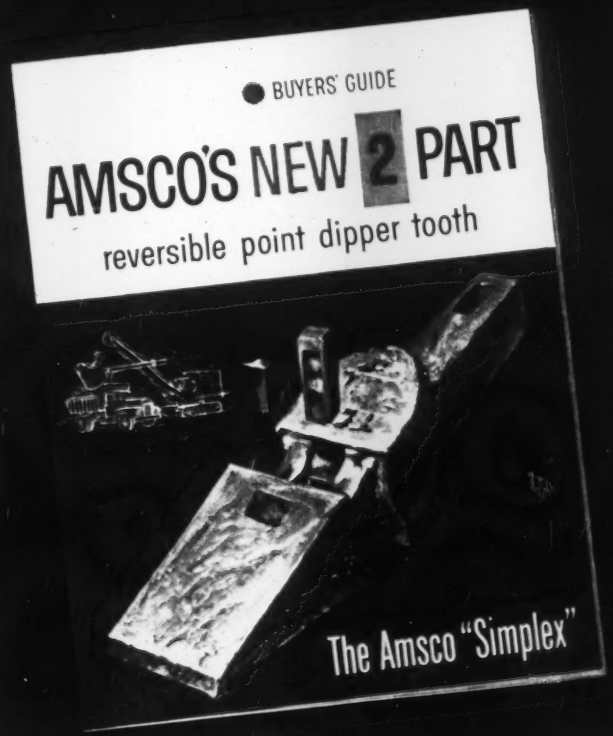

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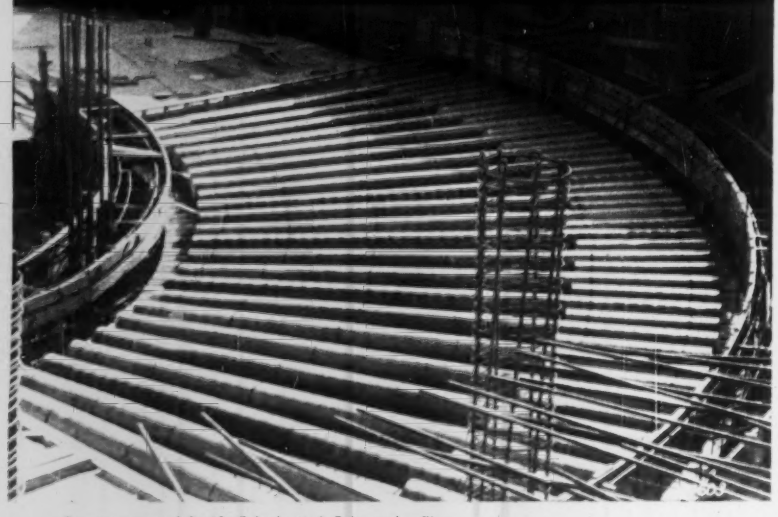

Garage ramp of Pacific Telephone & Telegraph office, Oakland, Calif. Ira Beals, architect; Pregnoff and Mather, engineers; R. F. Royden, contractor.

Form voids in concrete slabs with low-cost SONOCO SONOVOID FIBRE TUBES

Weight became a problem in the design of this concrete garage ramp. To provide required structural rigidity, the warped slab had to be extra thick in depth . . . extra weight was reduced by planning a voided slab system.

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3649

. . . Transportation projects

FREEWAY—Construction continues on the Golden Gate Freeway, Southern California.

January 2 on the $12-million Delair Bridge, which will carry Pennsylvania Railroad tracks on a double-track lift span over the Delaware River between Philadelphia and Delair, N. J. The bridge's 542-ft-long lift span will provide a clearance of 49 ft above mean high water and a clearance of 135 ft when it is hoisted. Completion is scheduled for 1961.

• **Delaware Expressway**—Construction is scheduled to start in the summer on the first section of the Delaware Expressway. Cost estimates for the project are $250 million to $300 million. A contract has been let for demolition of structures along three miles of the proposed route in Bucks County. The expressway will link the eastern terminus of the Pennsylvania Turnpike with the Pennsylvania-Delaware state line, following along the Delaware River.

• **Fort Pitt Bridge**—Completion of the Fort Pitt Bridge, which spans the Monongahela River at Pittsburgh, will take place this year. The $16-million, double-deck structure will carry four lanes of one-way traffic on each level. Part of the Penn-Lincoln Parkway System, the 750-ft structure will replace the Point Bridge.

• **St. Lawrence Bridge**—The $7-million, 3,480-ft-long suspension bridge that spans the St. Lawrence River to connect New York with Canada's Cornwall Island, was opened for traffic late last year after only six months of construction. The bridge has a 1,800-ft suspension section. Its 900-ft center span clears the river by 120 ft.

(Turn the page)

South

• **Miami's 36th Street Causeway**—The three-mile causeway between Miami and Miami Beach was started in July, 1958, and is scheduled for completion April 1, 1960. The $10-million project was started in the middle of Biscayne Bay, because of delays in right-of-way procurement at both ends.

• **Pontchartrain Expressway**—The $25-million expressway is 65% complete and is slated to be open for traffic June, 1959. The route includes two $5-million traffic interchanges and connects the Greater New Orleans Bridge with U. S. Highway 90 at Claiborne, La., and with U. S. Highway 61 at Carrollton, La. Work began in 1956.

• **Greater New Orleans Bridge**—The 3,020-ft bridge, part of a 2.3-mile crossing of the Mississippi River between New Orleans and Algiers, was completed last fall. It is a cantilever structure with a center span 1,575 ft long.

• **Richmond-Petersburg Turnpike**—This newly opened, $70-million highway is principally a city expressway. Of its 34.7 miles, more than 12 miles cut through Richmond, Va., and 4 miles go through Petersburg. The new artery connects Route 301 at the north with Route 1 at the south.

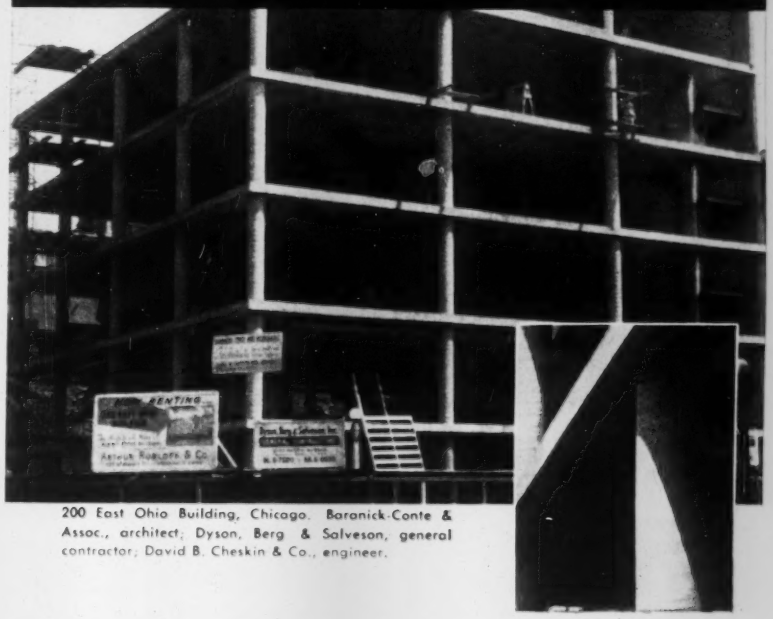
• **Fort Lauderdale Tunnel**—An 864-ft vehicular tunnel is under construction under the New River on U. S. 1 in Fort Lauderdale, Fla. The $6.5-million, four-lane project was started August 27, 1958. The tunnel is expected to be open by November 30 of this year.

• **Berry Field**—A jet runway and a new passenger terminal were 40% completed last year at Berry Field, Nashville, Tenn. A $1-million hangar for the Air National Guard was completed in 1958. The work on the terminal, the jet runway, and a 1,000-ft extension of the instrument runway is expected to be finished in 1959.

Middle West

• **O'Hare Field**—Commercial jet aircraft operations at O'Hare Field, Chicago's International Airport, were made possible in January when a runway was strengthened and extended from 8,000 ft to 8,840 ft. The 200-ft wide runway will be extended to 11,600 ft this year to accommodate trans-Atlantic jet airliners. Expansion of present facilities probably will be financed by the sale of $120 million worth of revenue bonds early this year. Included in the master plan are new terminal buildings, addi-

Faster Forming
of round concrete columns



200 East Ohio Building, Chicago. Baranick-Conte & Assoc., architect; Dyson, Berg & Salveson, general contractor; David B. Cheskin & Co., engineer.

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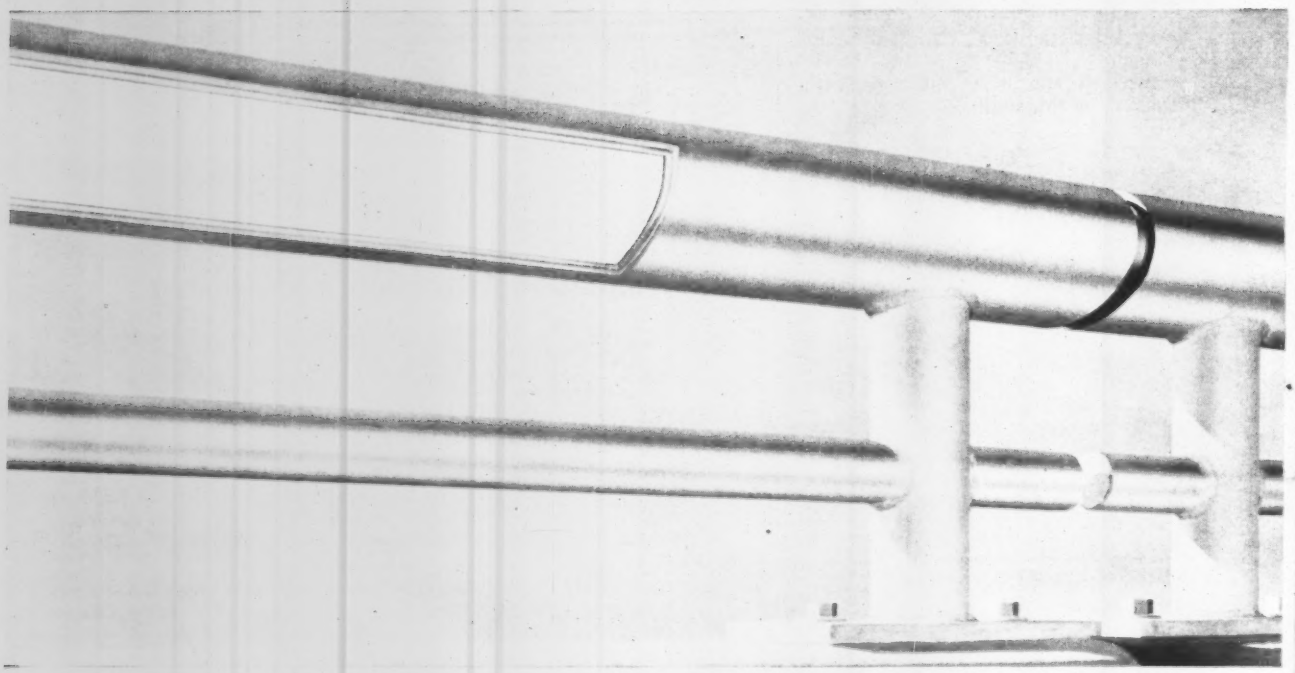
Manahawkin, N.J., Bay Bridge—New Jersey State Highway Department. General Contractor: Conduit and Foundations, Philadelphia, Pa. Steel and Railing erected by Cornell & Co., Inc., Woodbury, N.J. Lighting: General Electric. Photographs: Cortland V. D. Hubbard.

2400 FEET OF BRIDGE . . . 4800



To provide for luminaire lighting, the engineers of Manahawkin, N. J., Bay Bridge—in conjunction with General Electric—worked out the special design for the bridge railing shown above.

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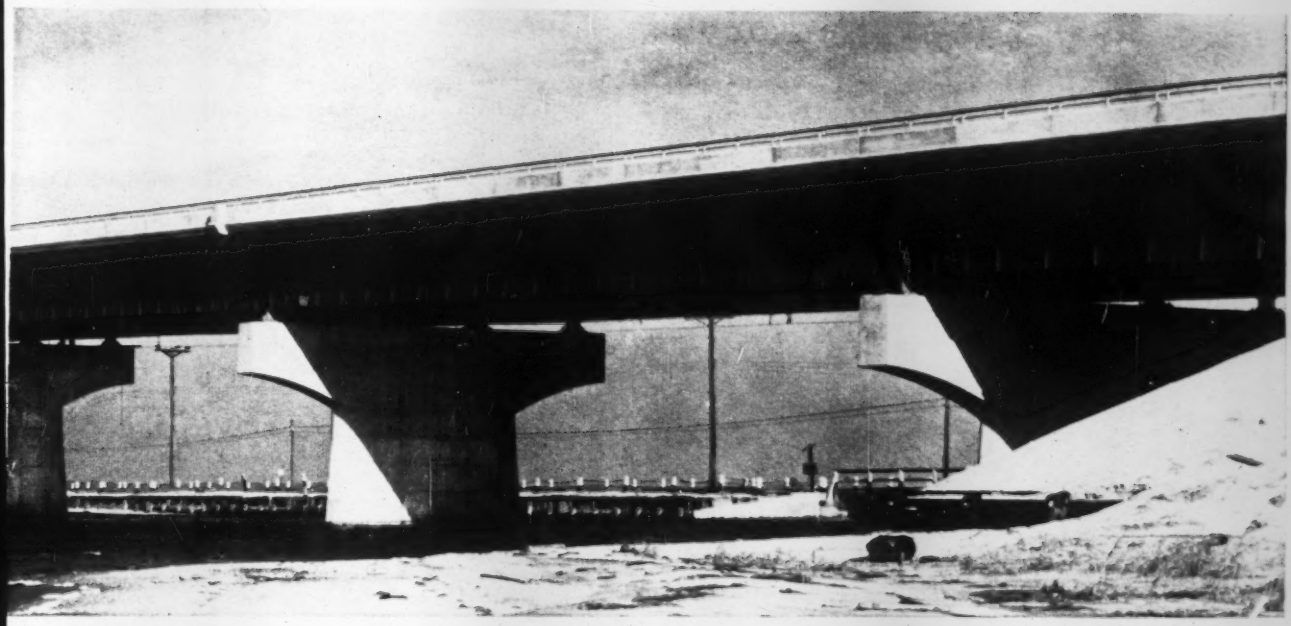
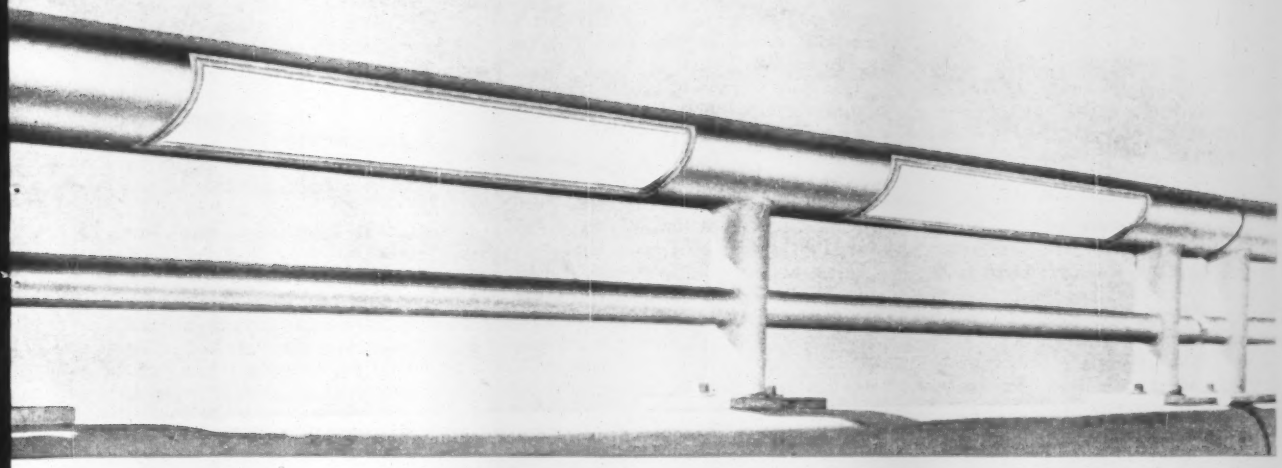


FEET OF FLYNN BRIDGE RAILING

Luminaire lights were inserted in these single 7¾" x 5" elliptical upper railings. Lower round-tube railing is 2⅜" o.d.



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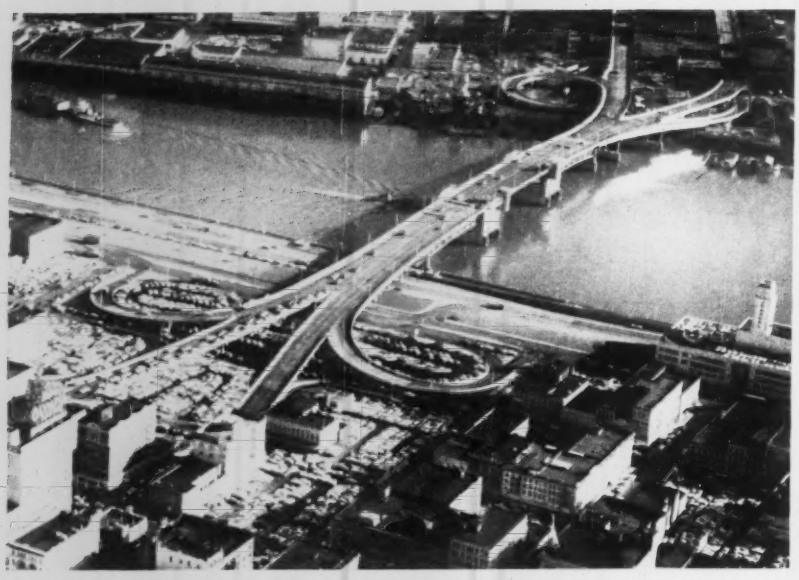

WILLAMETTE RIVER BRIDGE in Portland at Morrison St. was finished last year after 2½ years of construction and an expenditure of $12.5 million.

tional runways, taxiways, hangars, and fuel storage and handling facilities.

• **Chicago bridges**—The Department of Public Works in Chicago will award $18 million worth of contracts this year for construction and modernization of bridges and viaducts. Principal structures on which work will begin in 1959 will include a six-lane fixed bridge over Fullerton Ave.; a 12-lane bascule river bridge on the South Route Expressway, and a four-lane viaduct on Damen Ave.

• **Chicago expressways**—Three major expressways in the Chicago area will be completed this year. They are the **Northwest Expressway**, leading to O'Hare Field, an extension of **Edens Expressway** south to interchange with Northwest, and the **Congress St. Expressway** east from First Ave., Maywood, to Des Plaines Ave., Forest Park.

This year the Chicago Department of Public Works is expected to award contracts worth $13 million for construction on the **Northwest Expressway** and worth $10 million for work on the **South Route Expressway**. Preliminary plans call for the latter route to have a maximum of 14 lanes between 26th and 67th Sts. The $110-million project, to be financed with state, county and city funds, is to be finished in 1962.

• **Weir Cook Municipal Airport (Indianapolis, Ind.)**—A $600,000 paving project for aprons, parking and runway extensions is near completion. Plans call for a $1-million traffic control center at the north end of the airport. But no contracts have yet been awarded.

• **Detroit expressways**—The 9-mile north-south **John C. Lodge Expressway** and the 14-mile **Edsel Ford Expressway** in Detroit will be completed this year. In 1958 the Michigan State Highway Department awarded $11 million worth of construction contracts on the $140-million Ford expressway and completed three miles of it at a cost of $22 million. About $4 million worth of structures was completed on the $90-million Lodge expressway last year, leaving $1 million worth of the route construction in the Detroit Civic Center area to be done.

The Ford route will extend 55 miles beyond the city limits through Macomb and St. Clair Counties under a five-year, $70-million program. Contracts for the first 14 miles are expected to be awarded this year at a cost of $44 million. Plans call for the completion of the entire route by the first quarter of 1962.

Construction is underway on the 43-mile **Walter P. Chrysler Expressway**. The first section on which work has begun is a 3.4-mile, six-lane divided connection between the John C. Lodge Expressway in downtown Detroit and, to the east and north, the Edsel Ford Expressway. This stretch will cost $69 million. The northern terminus of the Chrysler route will be near Flint.

• **Ohio expressways**—More than one-quarter of the Ohio Department of Highways' $381 million in construction program funds were spent in 1958 on the 326-mile **Cincinnati-Conneaut Freeway**. Only a few sections in the Cleveland area are yet to be placed under contract.

The **Cincinnati-Dayton Expressway**, Ohio's only six-lane divided highway, will be open by August, 1960.

• **Toledo Expressway** — The 6.5-mile stretch between the Craig Memorial Bridge over the Maumee River on the Toledo Expressway and the Michigan state line will be completed in March. To be constructed under three contracts with a combined value of $9.7 million, this section will be the final link in the Toledo-Detroit Expressway. The route from Detroit south to the Ohio border has been completed.

West of Mississippi

• **Corpus Christi bridge**—Completion of the $9-million, 5,820-ft, six-lane bridge is scheduled for September of this year. Placement of the reinforced concrete deck on the truss spans will begin in February. Erection of the three main cantilever spans will be completed in April.

• **Texas expressways**—The Texas State Highway Department completed 85 miles of urban expressways in nine cities. Houston has the greatest share, 23 miles. Dallas is second, with 18 miles, and Austin has 14 miles. Last year the department appropriated $89 million for right-of-way purchases and awarded 720 contracts for $262 million worth of construction on its highway system.

• **Warren Air Force Base**—Access roads and two launching sites for Atlas intercontinental ballistic missiles were the most important projects completed at Warren AFB, Cheyenne, Wyo., in 1958. Launching facilities and utilities valued at $11.8 million and guidance facilities costing $664,000 are under construction. A launcher facility complex, launchers, blockhouses and other support structures will be begun early this year. Contracts let this year will amount to between $15 million and $20 million. The base will go into partial use next year.

• **Lowry Air Force Base**—A $50-million contract for construction of underground launching facilities for the Titan ICBM has been awarded. Most of the work done last year at the Denver base was on access roads, wells and site preparation. Estimates of the final cost of the base have been in the $72 million to $90-million range.

• **Offutt Air Force Base**—The first increment of work on this base, situated near Omaha, will begin early this year. More than $25-million has been authorized so far for Offutt. Completion date is still classified, but initial occupancy is scheduled for 1961.

(*Projects continued p. 88*)

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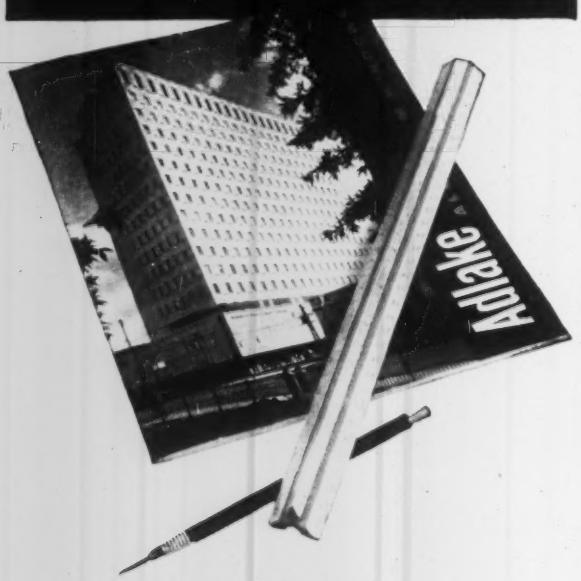

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. . . **Transportation projects**

Far West

• **Forbes Air Force Base**—Total authorization of funds for this Titan ICBM base is $29.7 million. The initial increment of work on the base is scheduled for advertising early in the summer. Contracts will cover all work, including operational sites, water, roads and assembly buildings.

• **Alaskan waterways**—The $1.5-million Bar Point Small Boat Harbor at Ketchikan, which provides harborage for 600 fishing boats, was completed in October, 1958. Bids were called in January for opening Gastineau Channel at Juneau by dredging a 75-ft-wide, 4½-mile-long channel through a bar formed by sedimentary glacial deposits. The channel, which will cost more than $1 million, is the largest of five channel and harbor projects scheduled for 1959.

Work was begun late last year on the dredging of a 70-ft channel to a depth of 12 ft at Dry Pass, 50 miles southwest of Wrangell. At Rocky Pass, southwest of Petersburg, dredging was started for a 150-ft-wide, 5-ft-deep channel.

• **Tacoma-Seattle-Everett freeway**—Work was carried out during the year on the first segments of the $230-million, 55-mile Tacoma-Seattle-Everett Freeway. Construction of piers was begun for a $16-million double-deck bridge over the Lake Washington Ship Canal in Seattle. In 1959, $30 million will be spent on the 19½-mile Seattle section. The project is scheduled for completion in 1965.

• **Alaskan Way Viaduct**—The double-deck Alaskan Way Viaduct in Seattle was extended nearly a mile to the south last year, at a cost of $2.8 million, and a surface roadway was constructed. The project will be finished in 1959 with the construction of ramps costing $550,000 and a $3-million section that will carry the north-south viaduct over the east-west Spokane St. viaduct.

• **Spokane freeway**—A two-mile section of the six-lane, concrete-paved freeway was opened late last year. This was the first part of the freeway to be opened within the city limits. The completed parts of the route now extend continuously for 12.6 miles. The project has cost $11 million so far.

The only actual construction work expected to be started this year is a $3-million, four-lane bridge. The remaining portions of the freeway within the city limits are scheduled to cost $33 million to construct.

• **Hood Canal Bridge**—Piers were finished last year for a floating bridge over

Project:
Approach ramp to new deck of George Washington Bridge, New York City

Owner & Engineers:
The Port of New York Authority

General Contractor:
Gull Contracting Co., New York City

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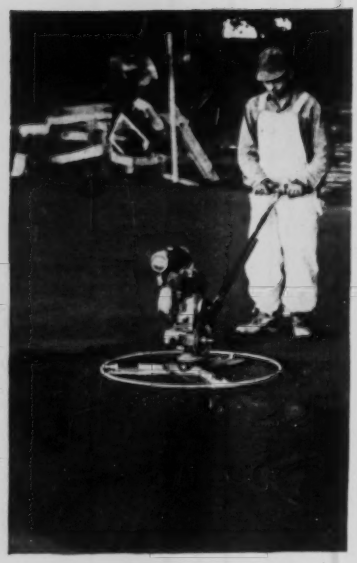

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26-25

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FENTON-CLIO EXPRESSWAY in Michigan, a $21-million, 34-mile route, is one of the longest stretches of toll-free, limited access expressway in the Midwest.

Hood Canal, an arm of Puget Sound in Washington that is subject to tidal action. Most of the work on the $14.2-million contract for the project was done in a Seattle graving dock. Eleven of the 27 reinforced-concrete pontoons were completed and in preparation for towing to the site next spring, but two sank to the bottom of the Duwamish waterway. The two-lane bridge was to be finished in 1960.

• **Vandenberg Air Force Base**—This ICBM base, at Lompac, Calif., is scheduled to be operational by mid-1959. Total value of contracts awarded to date is $60 million. In addition to supporting an Atlas ICBM squadron, the base will include an IRBM-ICBM training area and a space exploration and development launching site.

• **Fairchild Air Force Base**—This ICBM base will be constructed near Spokane. The first general construction contracts are scheduled to be awarded in July.

• **Bremerton drydock**—A contract was awarded late last year for major work involved in construction of a carrier repair drydock in the Puget Sound Naval Shipyard at Bremerton, Wash. It will be one of the world's largest drydocks, 1,180 ft long, 180 ft wide and 61 ft deep. Completion is planned for 1961.

• **Columbia River navigation**—The dredging of the $10-million, 27-ft channel in the Columbia River from Vancouver, Wash., to The Dalles, Ore., is scheduled to reach 50% completion by June 30. By that time Corps of Engineers and contract dredges working on the project will have moved 6.6-million cu yd of material.

• **R. H. Baldock Freeway**—Twelve contracts were in progress by the end of 1958 on the $10-million final link of the Portland-Salem Freeway in Oregon. The link extends 6.7 miles from the northern end of the completed portion of the freeway into Portland. Paving will start in the spring.

• **Interstate Bridge**—A new Columbia River Interstate Bridge at Portland, Ore., paralleling an existing structure built in 1917, was completed at a cost of $6.8 million last year. The old span is now being rebuilt to conform to the new span in clearance above low water mark and to federal interstate standards under a $3-million contract.

• **Oregon coast highway**—All grading is under contract and in progress on the 15 miles of new two-lane highway that will replace a narrow and circuitous 17-mile stretch now in use. The new $12.6-million section, financed by a special bond issue authorized by the 1957 legislature, will place the Oregon Coast Highway along the sea.

• **Portland International Airport**—The construction of a $5.8-million, three-story terminal building brought to near-completion the Port of Portland's $8.4-million airport improvement pro-

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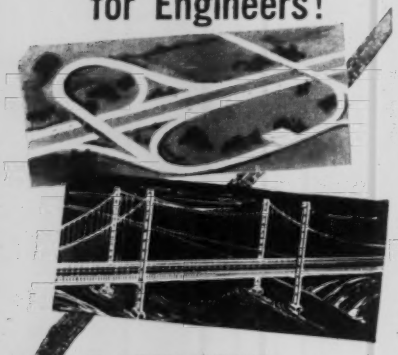

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WASHINGTON'S OLYMPIA FREEWAY, opened to traffic in December, includes the state's first three-level interchange. The route was built over a four-year period.

gram. The terminal, which now accommodates as many as 18 planes simultaneously, is designed for the addition of two more concourses that will permit loading of 34 planes.

• **Bayshore Freeway**—Three jobs having a total value of $8.7 million were completed last year, adding another eight miles to the freeway, which will extend from San Francisco to San Jose, a distance of 46 miles. A fourth project, the Mountain View-Alviso interchange, is still under construction. A $7.9-million interchange between Bayshore and Southern Freeways is being built in San Francisco and should be finished soon.

• **East Shore Freeway**—All but one segment of this 55-mile freeway between San Jose and Carquinez Bridge has been finished and a final, 2¼-mile, $6.2-million project is now under way to a January, 1960, completion. During 1958, four projects valued at $27.6 million were completed, adding 10.4 miles.

• **Central Freeway**—This San Francisco freeway will carry U.S. 101 through the city from south to north, linking the Bayshore Freeway with the Golden Gate Bridge. Work is in progress on a 1.4-mile segment of the double-deck freeway that will cost $7.8 million. It will be completed this spring.

• **Embarcadero Freeway**—This double-deck, elevated freeway in San Francisco is to be finished in May. Skirting San Francisco Bay above the docks and the Ferry Building, the skyway is supported by double-level concrete structures, and varies in width from four to eight lanes.

• **Carquinez Bridge**—This new parallel bridge across Carquinez Strait, on U.S. 40 between San Francisco and Sacramento, was opened in December. The bridge cost about $30 million and the approaches, some $13 million. Completed ahead of schedule, the new Carquinez span will handle traffic until the old bridge is widened and freeway connection facilities are completed, in June or July. Both bridges have two 1,100-ft cantilever spans, two 500-ft side spans and a 150-ft mid-crossing tower.

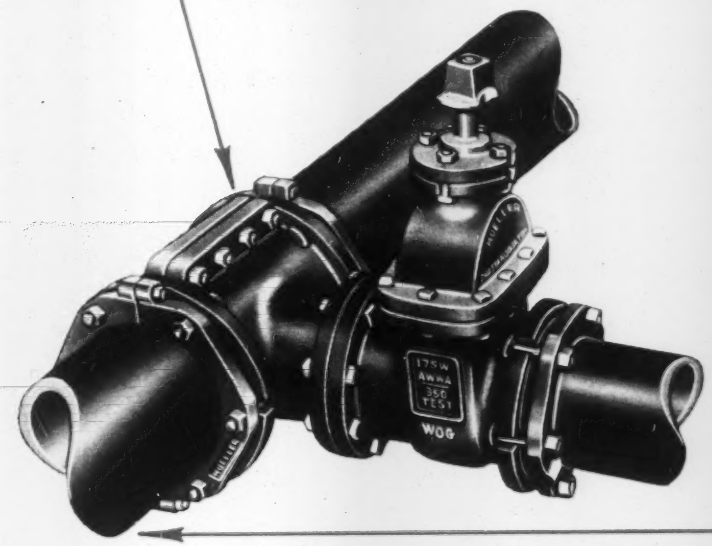
• **U.S. Highway 40**—Four large-scale freeway jobs were completed on U.S. Highway 40 east of Sacramento during the 1958 construction season. Five others are under contract and contracts will be awarded early this year for three new projects costing about $30 million.

One of the major tasks to be undertaken in 1959 will be the building of 10.3 miles of freeway on new alignment over Donner Summit in the Sierra Nevada. When current and budgeted projects are completed there will be only a single, 11-mile gap in continuous freeway and expressway between Sacramento and the State of Nevada, a distance of 117 miles.

• **Marina del Rey harbor**—A few preliminary contracts were awarded during 1958 for work on the $30-million Marina del Rey small craft harbor and recreation area for Los Angeles County. When finished, it will accommodate 9,000 fishing and pleasure boats. A main channel will be 1,000 ft wide and two miles long. Basins will be 600 ft wide. The Corps of Engineers will begin dredging operations this year.

• **Los Angeles International Airport**—The $40-million International Airport expansion program began last year with the start of construction of an administration building. An 8,925-ft runway on the site of the new 265-acre passenger

one tapping sleeve ...



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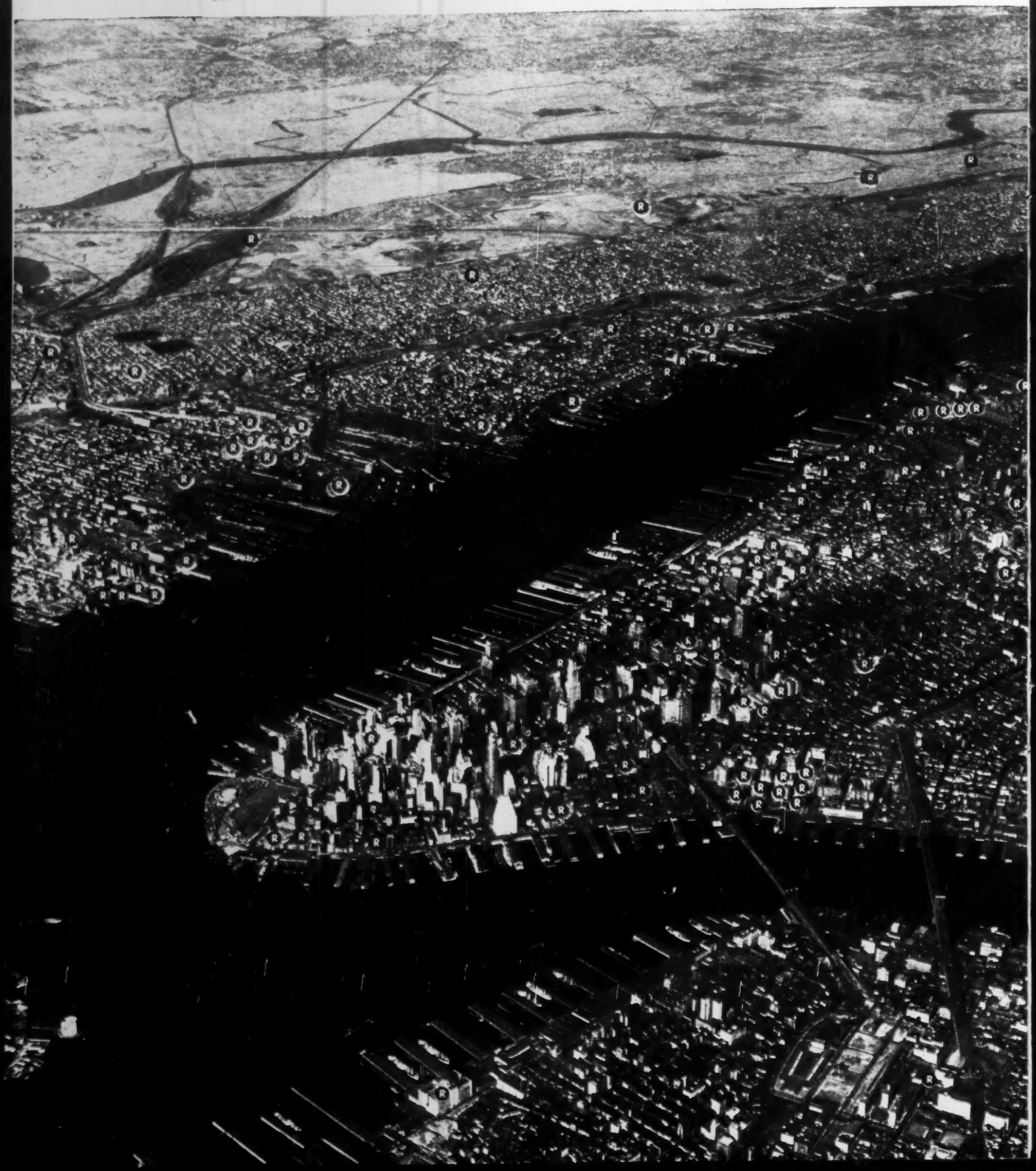

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While not shown in the picture, hangars at La Guardia Airport, sections of the Major Deegan Expressway and the Bulova Watch Plant also testify to our wide and diversified experience. So does a Raymond-supported handball court at Coney Island, for that matter.

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NEW FORTH BRIDGE in Scotland (foreground) will have the world's longest suspension span—3,300 ft—outside of the U.S. The $46.2-million, 5,980-ft highway bridge will be an appropriate companion to the historic Firth of Forth Bridge (background).

terminal area was near completion at the end of 1958. Two runways have been extended from 8,500 ft to 10,000 ft and eight taxiways were enlarged to accommodate large commercial jet planes. Other work included the preparation of a site for a $24-million complex of 12 buildings that will be begun this year.

• **Port of Los Angeles**—Three main projects were in progress during the first full year of the 15-year, $101-million port expansion program. Fill was dredged for an 18-acre peninsula, the site of a super tanker terminal with a docking length of 1,100 ft. It will be finished in March. Construction of a cargo terminal got under way with completion of a reinforced concrete wharf and the award of a contract for construction of a large transit shed. Bids have been called for dredging a slip, with work to begin early this year as part of the $15-million cargo-passenger terminal project. Target date for completion of this project is late 1961.

• **Mission Bay**—A $4.5-million contract was awarded last year for dredging for a $30-million recreational aquatic park for San Diego. The dredging will begin early this year and involve some 16 million cu yd of sand.

• **San Diego Port Facility**—The Tenth Ave. Marine Terminal will be finished early this year. Work is yet to be done on oil tanks and a fuel bunkering facility. Total cost of the project, $10 million, will be financed by a bond issue.

• **Sacramento Deep Water Channel**—Two major projects with a combined value of $13 million were begun last year on this channel. They were the dredging of a seven-mile harbor and turning basin, and the construction of a 600-ft long barge canal lock and a bascule bridge at the end of the lock. The finished channel, which will give the California capital inland port status, will have a depth of 30 ft at low tide, a bottom width of 200 ft, and a surface width of 475 ft. Corps of Engineers is expected to complete the channel by June, 1962.

• **Southern California Freeways**—Freeway construction in the three-county area of Los Angeles, Orange and Ventura progressed in 1958 with the completion of 59½ miles at a cost of $63.5 million. This raised the area's freeway mileage to 378.1, representing a total building cost of $305.5 million.

The **Long Beach Freeway** and the **Santa Ana Freeway** were finished last year. The value of the contracts awarded during the year was $53.3 million for 36.6 miles of freeway. Among the major contracts were an $8.9-million one for a 4.8-mile section of the **Ventura Freeway** and a $5.5-million arrangement for a 3.9-mile stretch on the same route. An $8.1-million contract was awarded for 4.9 miles of the **Harbor Freeway.**

Construction got well under way in 1958 on the 13-mile **Santa Monica Freeway,** which will extend from downtown Los Angeles to the Pacific Ocean, much of it by way of viaducts that will carry traffic over some of the densest business and industrial areas of the city. The largest single project in progress is a three-mile viaduct connecting the Santa Monica Freeway to the Harbor and Santa Ana Freeways at a cost of $30 million.

Other work in progress in 1958 included 13.8 miles of the **San Diego Freeway,** built at a cost of more than $15 million; 5.9 miles of the **Golden State Freeway** valued at $16 million; 15.4 miles of the Ventura Freeway to be built for $23 million, and a 4.9-mile, $8-million part of the Harbor Freeway.

The fiscal 1959-1960 budget, which could be obligated at the beginning of this year, includes $33.4 million for 6.4 miles of the Santa Monica Freeway; $24.5 million for the San Diego Freeway, of which $8.5 million will go for structures and approaches to the Long Beach Freeway; and $14.5 million for 7.4 miles of the Golden State Freeway, including $8.5 million for one mile of interchange with the Pasadena Freeway.

Construction will begin early this year on a 3.6-mile section of the Long Beach Freeway that will involve building of flood control channels and sewers. This section will cost approximately $7.75 million.

• **Southern California Gas Pipelines**—Southern Counties Gas Co., Los Angeles, spent $22.8 million on new construction last year and will increase its construction allocations to $31 million in 1959. Among the major budget items is $13.5 million for additions to the transmission system. A 13-story headquarters facility is scheduled for completion late this year.

• **Salt Lake Railroad Fill**—Southern Pacific's $49-million fill, which will replace a timber trestle supporting rails on a short cut across Great Salt Lake, was 90% complete at the beginning of 1959. Laying track on the partially completed fill will begin in May. Traffic will operate on a single track, with a 10,250-ft passing siding near mid-lake.

• **Honolulu Tunnel**—Three miles of road surfacing contracts are to be awarded this year. They will close out the long-stalled and trouble-plagued Kalihi Valley traffic tunnel project that will open a new route between Honolulu and its suburbs across the Koolau Mountains. The first 2,773-ft bore was finished and put into limited use late last year. The second is under way.

ADVANCE Scaffold cuts labor costs . . . on world's largest filtration plant

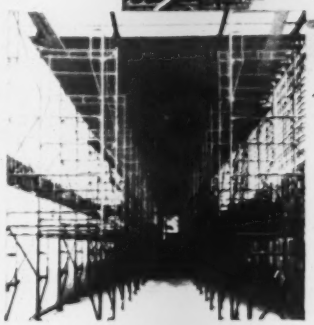
When completed, Chicago's Central District Filtration Plant will provide filtered water to about 3,000,000 people in the northern section of the city. Total cost, including connecting tunnels will approximate $95 million. The ADVANCE Scaffold used on the project was furnished by Riverside Sales Contractors Equipment, Inc., Brookfield, Illinois.

When it comes to making a profit on low-bid narrow-margin jobs, the equipment used and the engineering service behind it can well mean the difference between profit and loss. That's why it's essential to select building construction tools that are designed for fast, dependable, economical production . . . tools that will handle any job that comes along on a high output level regardless of time schedules.

Such was the problem facing the Gust K. Newberg Construction Company in their work on Chicago's $95 million Central District Filtration Plant. The structure, largest of its kind in the world, is a complicated maze of walls, conduits and pipe galleries that consumed in excess of 100,000 cubic yards of concrete in the making. The 562,000 square feet of slab area was supported for shoring with towers of standard ADVANCE Scaffold panels erected to the exacting specifications of the Chicago Department of Public Works. The contractor could ill afford error in computing requirements for materials and man power.

Newberg officials kept close watch on the cost of labor for erecting the shoring scaffold. Their figures showed that 2 carpenters and 1 laborer could erect a scaffold tower 3 panels high, with jacks in place, every 12 minutes. Computed against the hourly scale of carpenters and laborers, Newberg's cost was less than 3 cents per square foot of slab area . . . upwards to 50 percent less than the average cost for this type of work.

Carpenters are preparing to lay stringers and plywood panels on ADVANCE Scaffold shoring towers prior to a pour.



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Research May Tip the Scales As

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- **Both steel and concrete suppliers are pressing research programs. Object: new specs, new building codes.**
- **It adds up to expanded opportunity for you in design and construction.**

Building construction as a whole did well in 1958. True, few records were broken, but the progressive trends of previous years continued without deviation.

• **Contracts awarded stayed at a high level,** bettered the dollar volume for 1957.

• **Designers courageously tackled new shapes and structural systems.** They also pursued thin-wall construction for tall buildings, but with added emphasis on color.

• **Contractors met the challenge of the new designs.** Furthermore, under heavy competitive pressure, they managed, on most work, to keep construction costs down; but financial casualties were higher than usual.

One important condition, however, did change. Material and manpower shortages became insignificant last year. The supply of building materials, in particular, was more than ample.

This situation resulted from an increase in production facilities in recent years and a decrease in demand in 1957, paralleling the recession in the national economy.

• **Competition gets tougher**—The copious supply of materials, unusual in recent times, kept prices in hand. But more important, it offered designers a choice for almost every purpose. The resulting competition among suppliers encouraged more thinking directed at improving the quality of materials and lowering prices.

Structural steel is a good example. After several years of short supply fabricators were able to reduce their backlog of unfilled orders by about 1 million tons last year. In that same period, shipments totaled 3.65 million tons.

For 1959, the picture is expected to change still more: H. B. Dietrich, president, American Institute of Steel Construction, predicts new orders exceeding 3 million tons will be written, while shipments will reach 3.3 million tons. Thus, next year, shipments will keep pace with demand. Designers wishing to specify structural steel can figure on it being available when needed.

But in the meantime, rolling mills are increasing their total capacity for producing heavy structural shapes and will set a new high in 1959. Fabricators also will attain an all-time high in fabricating potential.

To keep pace with this growth, steel men are seeking to expand the market for structural steel in the face of competition from other structural materials, such as reinforced and prestressed concrete, which made great headway when steel was in short supply.

The biggest opportunity to improve the competitive position of structural steel appears to lie in cost reduction. As a first step in this direction, fabricators last year improved their plants to cut production costs (ENR Jan. 22, 1959, p. 50). Next, they decided to increase their expenditures for research, and stepped up promotional and educational efforts.

In the offing as a result are specification modifications that will change design and fabrication techniques and lower steel-framing costs.

The first big change you can expect will be adoption of specifications for plastic design of one-story frames subjected only to static and wind loads. The long-awaited AISC design manual covering this subject has just been published, and research on plastic design of multi-story frames is being pushed. In England, a four-story building de-

Competition Plays Bigger Role

signed by this theory was put into use last year (ENR Oct. 2, 1958, p. 39). Plastic design is expected to make a significant reduction in the cost of continuous framing (ENR April 4, 1957, p. 38).

Next, look for specification changes permitting fewer high-strength bolts in structural connections.

Meanwhile, the Steel Joist Institute moved to improve the competitive position of open-web joists. It upped allowable unit stresses from 18,000 to 20,000 psi.

Cement men are not standing idly by. Last year, the Portland Cement Association added another laboratory to its research center at Skokie, Ill. This building will be useful not only because of the work that will be carried out in it but also because its design served a valuable research purpose (ENR Sept. 11, 1958, p. 24). Among other things, it may prove that high-strength steel can be used safely at high stresses to reinforce concrete beams. If code-writing authorities can be convinced of this, concrete costs can be cut.

In the face of this stepped-up competition, the outlook for wood is gloomy. Last year, it began to look as if even a piece of the home-building market will be lost to metals. Several metal producers started a big push for steel and aluminum houses; the drive will bear watching in 1959.

Competition between producers of architectural materials frequently was just as severe in 1958 as between the structurals. Materials for exterior walls are a good example.

Producers of traditional brick and stone fought hard against inroads being made with thin-wall panels. In line with the trend to more colorful exteriors (ENR Dec. 25, 1958, p. 29), brick men made substantial progress with a bright-colored glazed brick. Architectural terra-cotta producers made headway with an adaptation to panel construction—CV (ceramic veneer) Panelwall. And the structural clay products industry looked for further gains with a newly developed SCR loadbearing building panel, faced with brick, tile or ceramic veneer.

Metal-wall fabricators kept up with the demand for colored panels by offering surfaces with colors and textures applied in a wide variety of ways. In New York City, a gold-colored aluminum skyscraper was completed and work was started on one enclosed in black-coated stainless steel. Porcelain-enameled steel in almost every shade was applied to buildings all over the U.S.

Meanwhile, plastics manufacturers pushed into the market. Sales of reinforced plastic panels increased 25% in 1958, to a high of 62 million sq ft.

• High-speed computers—In 1958, the impact of high-speed computers began to be felt in structural design. As was plainly evident at the ASCE Conference on Electronic Computation in Kansas City, these machines are compelling engineers to take new approaches to their problems (ENR Nov. 26, 1958, p. 28).

Engineers find they don't restrict use of the computers to repetitive solutions of formulas, but can get the machines to turn out complete designs and stress analyses. Methods too laborious for slide rules and desk computers, such as the slope-deflection solution of continuous frames, now may be advantageous with high-speed computers.

Furthermore, structural engineers can use the machines to analyze and design structures for which theoretical treatment previously was impractical. It seems logical to assume that the machines will encourage engineers to greater use of complex but economical structural systems, such as odd-shaped thin shells and space frames of unusal geometry, hitherto handicapped by the difficulty of computing stresses.

• Unusual structures—Even without the aid of electronic brains, building designers, as in 1957, continued to try new shapes. Some excellent examples were concentrated at the Brussels World's Fair.

Two of the most outstanding buildings there (now demolished) were the French and U.S. Pavilions, both with cable-suspended roofs.

The French Pavilion roof consisted of two sheet-steel hyperbolic paraboloids and a thin, long, arrow-like projection. The roof had three main supports, but it was balanced under dead load about a pivot, the projection acting as a counterweight (ENR Dec. 4, 1958, p. 42).

The U.S. Pavilion roof, 252 ft in diameter, resembled a bicycle wheel (ENR Sept. 26, 1957, p. 36). Cables strung between an inner hub and an outer compression ring supported a plastic enclosure.

Another unusual structure opened to the public last year was the Benjamin Franklin Congress Hall in West Berlin. Its saddle-shaped concrete roof is supported by cables stretched between a pair of sloping concrete arches that share the same base but lean away from each other (ENR Sept. 12, 1957, p. 75).

In Paris, work progressed last year on the world's largest thin-shell roof. (ENR April 17, 1958, p. 45). Triangular in plan, supported at three points, the double-curved, concrete structure for the Palace of Exposition of the National Center of Industries spans 720 ft between supports. It has a 152-ft rise.

Another noteworthy 1958 structure is the subterranean oval basilica at Lourdes, France. Framing for the 660 x 266-ft curved concrete roof consists of two-hinged concrete arches in a fishbone pattern (ENR May 22, 1958, p. 29). Each arch rib forks at its ends into two legs joined by a prestressed concrete tie. The lower leg is seated on a foundation hinge, whereas the upper leg extends horizontally to a support on a peripheral retaining wall.

In the U.S., work started last year on Pittsburgh's unusual circular auditorium. It will have a retractable roof. This movable enclosure will be a stainless steel dome more than 400 ft in diameter and 116 ft high at the crown. Hinged to a cantilever support at the center, the leaves comprising the roof will roll into a nested position, as do multileaf rolling doors (ENR Jan. 30, 1958, p. 30).

In Ft. Worth, Texas, a 550 x 158-ft granary was constructed with an air-supported enclosure. A horizontal cylinder in shape, the huge cover was made of aluminized steel (ENR July 10, 1958, p. 25). The shape is maintained by 25 to 30 psf air pressure.

In New Haven, Conn., an odd-shaped building housing a hockey rink was completed. The wood-plank roof is carried on cables strung between curved, concrete exterior walls and a concrete arch that looks like the spine of a dinosaur (ENR April 10, 1958, p. 30).

(*Turn the page*)

THIN WALLS remain popular. First structure in Detroit's 21-building development has metal and glass curtain walls.

REINFORCED CONCRETE framing reaches new heights with the new 40-story Executive House, Chicago, Ill.

Another extraordinarily shaped structure dedicated last year was the First Presbyterian Church in Stamford, Conn. Made of triangular precast concrete sections, the building in overall appearance resembles a fish, one of Christianity's oldest symbols (ENR April 3, 1958, p. 33).

There was no change in the trend to folded-plate construction. A noteworthy variation however, was the building with an accordion-pleated roof built for the American Concrete Institute in Detroit. The folded-plate enclosure was made of precast concrete. Designed as a concrete showpiece, the building also has precast walls (ENR Oct. 24, 1957, p. 44).

The trend to long-span cable-suspended roofs for hangars continues. This design offers large column-free areas. At New York International Airport, work started last year on a big one—a double-cantilever hangar with steel girders projecting 158 ft from a central bay. The cable supporting each girder is anchored to a steel roof girder over the central bay.

Several hangars in the U.S. were built last year with concrete folded plates cantilevered, some cable-suspended, some not (ENR Feb. 20, 1958, p. 47).

Concrete hyperbolic-paraboloids also continued to be popular. An outstanding application was for the roof of the two-story Texas Instruments, Inc., plant in Dallas. The thin-shell roof made practical 63-ft bays in the second story.

Also novel is the use in this building of 9-ft-deep concrete space trusses to support the second floor. The plenum between second floor and ceiling of the story below is utilized for ductwork and air-handling equipment (ENR May 8, 1958, p. 40).

Spherical domes also stayed in the headlines last year. Most prominent was a 384-ft-dia steel dome built for Union Tank Car Co. at Baton Rouge, La. It was composed of 321 hexagonal steel panels and braced by rod and pipe framing (ENR Nov. 13, 1958, p. 34). In the interior is another spherical dome, this one 100 ft in diameter.

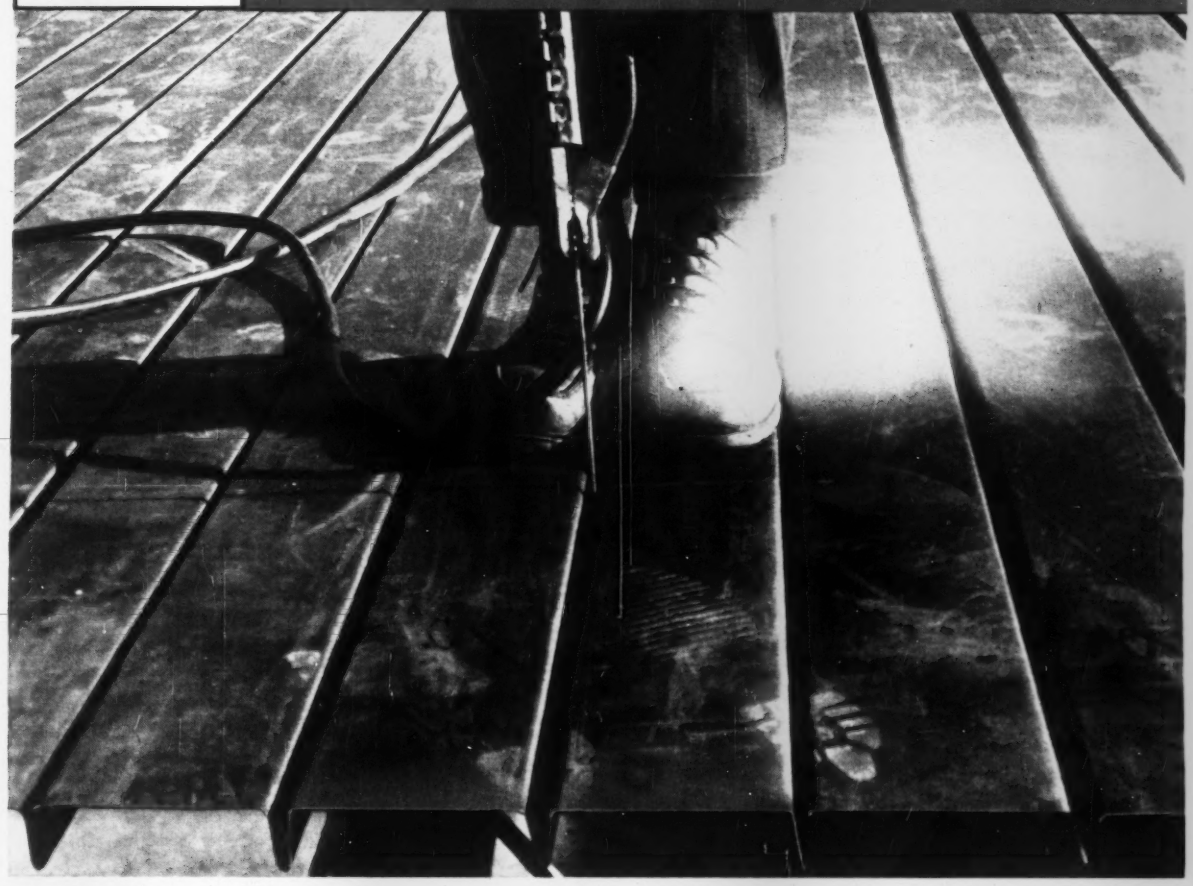
In the Northwest, thin-shell construction in 1958 was as likely to be of plywood as concrete or metal. Typical examples: a store in a Seattle shopping center with plywood folded-plate roof; the H. F. Hunt Junior High School in Tacoma, where the gymnasium is roofed with 16-ft-span multiple plywood arches and the cafeteria with a plywood dome (ENR May 1, 1958, p. 34).

Also, 1958 saw lift-slabs soaring higher and higher into the sky. In Columbus, a parking garage was erected to a record height for the U.S. of 88 ft by casting floors and roofs at ground level and then raising them with jacks on top of the columns. But in Sydney, Australia, work started on what will be the world's tallest building erected by this method—a 210-ft-high, 21-story office building. It will depose the present world champion, a 101-ft-high, 11-story apartment house in Mexico City.

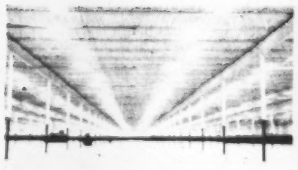
And a U.S. record also was set for height of conventional reinforced concrete buildings. Executive House, an apartment-hotel in Chicago, was topped

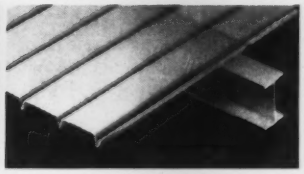
Wheeling

METAL CULVERT PIPE BY WHEELING



Here's everything you want in a roof deck!





CLEANER – Tri-Rib Roof Deck is always made from Wheeling's quality steel. Unlike decks made from other substances, Tri-Rib will not dust off and it cannot be attacked by fungus. What's more, Tri-Rib saves time and money because it can be installed in any weather . . . rain or shine.

GREATER STRENGTH – Some decks are made of ordinary commercial grade steel. But not Tri-Rib! It's always full-gauge *structural* grade. You get higher tensile strength and an extra safety factor. Tri-Rib fully complies with the latest A.I.S.I. Light Gauge Steel Design Manual.

UNIFORM – Every piece fits without forcing because Tri-Rib is made by one of America's most experienced steel producers. In addition to serving as a primer, Tri-Rib's specially formulated zinc chromate, iron oxide paint affords positive rust resistance during construction.

ONE FIELD COAT – Tri-Rib's *baked-on* coating takes any good field paint regardless of color. One field coat does the job in nearly every case. Get the full story on Tri-Rib from your Wheeling representative. Or write Wheeling Corrugating Company, Wheeling, West Virginia.

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Immediate delivery on all stocked items from these warehouses: *Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Minneapolis, New Orleans, New York, Philadelphia, Richmond, St. Louis.* Sales Offices: *Atlanta, Houston*

DALLAS' $34-million center used 16,100 tons of structural steel.

EXTERIOR WALL color keynotes this New York City structure. It has a facade of aluminum and blue-tinted glass or blue brick spandrels.

out last year at 40 stories. Its roof is 365 ft above the street (ENR June 27, 1957, p. 39). The world's tallest concrete building still is the Banco do Sao Paulo in Brazil, with a height of 507 ft.

• **Housing trends** Housing design and construction changed little last year. But changes can be expected this year and next.

For one thing, the Federal Housing Administration issued new minimum property standards (ENR Nov. 27, 1958, p. 24), and industry observers are certain they will affect more than just government-backed housing. The standards are expected to encourage faster acceptance of new and unusual methods and materials. They permit smaller houses, require larger rooms and halls, accept inside kitchens and bathrooms, step up storage requirements, call for bigger sewage-disposal systems and allow lower ceilings.

A second important factor suggesting revisions in house construction is the change in public demand, as voiced at the 1958 Women's Conference on Housing (ENR Oct. 23, 1958, p. 26). Women attending objected to open plans, multicolor exteriors, flat roofs, rigid floors. They asked for more interior walls. They wanted only double-hung or horizontal-sliding windows. They called for uniform heating, with room or zone controls and humidity adjustment. They preferred one-story houses, rather than split level or multistory.

A third factor tending to instigate a change is the National Association of Home Builders' research-house program. Two more houses, one in Knoxville, Tenn., and one in South Bend, Ind., were added last year (ENR Aug. 7, 1958, p. 26). Under this program new materials and methods are tried out. The program started in 1957 with a house in Kensington, Md.

An attempt was made last year to develop a national building code for small houses under American Standards Association sponsorship. However, the move was stymied, principally because of the objections of several building-official organizations that sponsor model codes. The sponsors had hoped that a single building code would permit greater standardization of house parts, thus lead to lower construction costs.

Meanwhile, even without a national code, prefabricators continued their slow expansion into the housing market. Last year, they shipped 61,000 units, up 5,000 over 1957. Total housing units started last year came to 1,170,000. They look for another 5,000-unit increase in 1959.

• **Lighting and heating advances** In the field of building illumination no significant changes in existing trends took place last year. But a trend to higher illumination levels can be expected to start this year.

The move may result from the 1958 recommendations of the Illuminating Engineering Society (ENR Nov. 20, 1958, p. 37). Committees of IES approved higher levels for ten major fields of occupation.

Reinforced CONCRETE

provides economies of design and construction for new hospital!

Front view of Grossmont District Hospital, San Diego, California. Visors over the windows and right-angled fins control glare, yet permit ample sunlight.

Designed for efficiency . . Engineered for expansion . .

Another impressive example of reinforced concrete construction is Grossmont District Hospital. Costing but $1,700,000, this 105-bed structure is a model of planning efficiency. Architects Pereira and Luckman report that the column and cantilever type construction is precedent-setting in this type of building, and that none of the structure's weight is carried by the exterior walls. The framing of the building is reinforced concrete. Factors influencing the architect's choice of reinforced concrete were lower cost and ready availability of materials.

The design economies and efficiencies, and optimum eye appeal have made this structure a subject of civic interest.

Grossmont District Hospital
San Diego, California
Architects: Pereira and Luckman
Los Angeles
Structural Engineer: Albert A. Erkel
Los Angeles
Contractor: Trepte Construction Co., Inc.
Los Angeles

CONCRETE REINFORCING STEEL INSTITUTE

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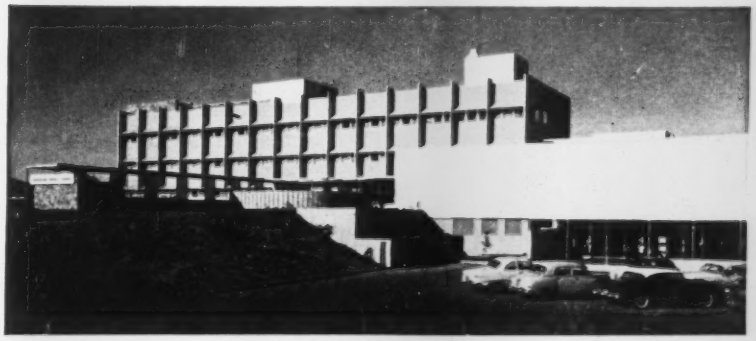
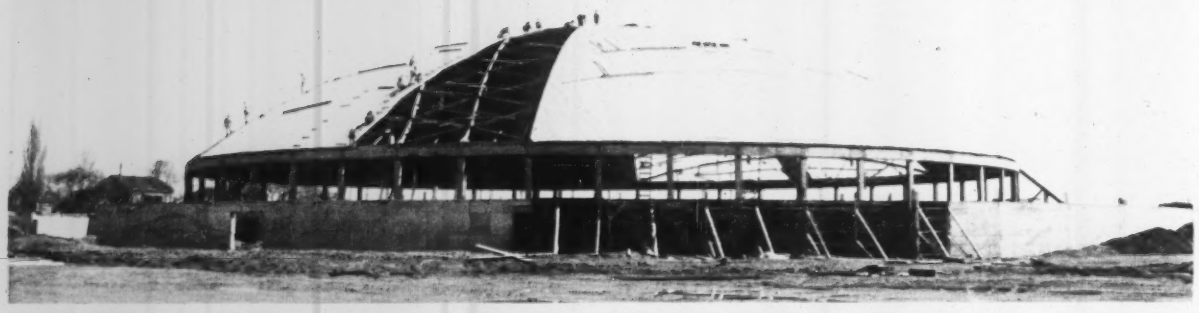
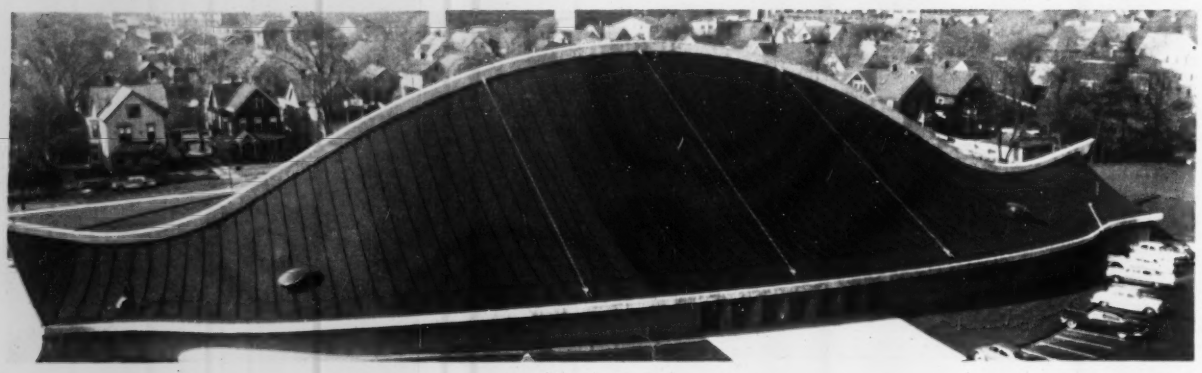
Chicago 3, Illinois

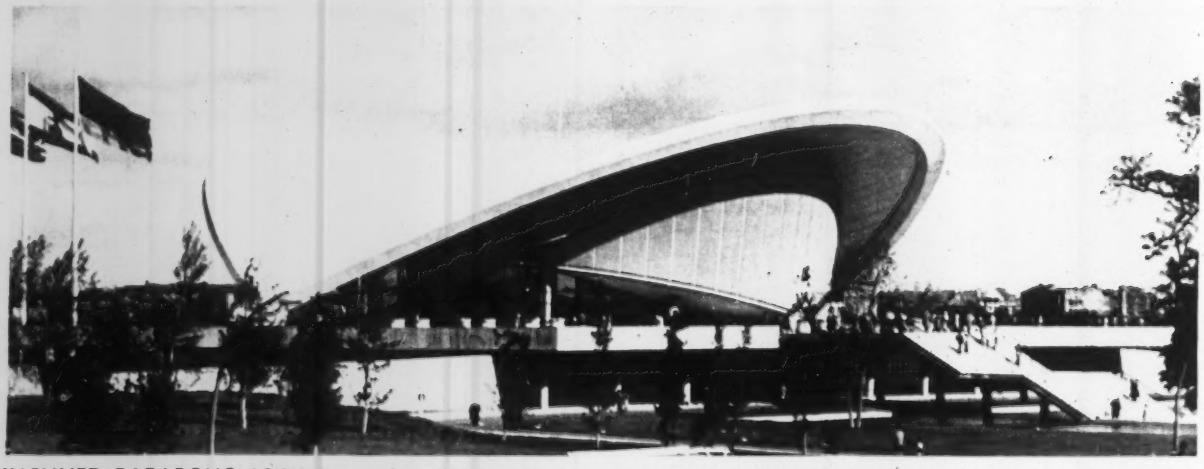




GLUED-LAMINATED MEMBERS support the roof of this dome-shaped church building in Cuyahoga Falls, Ohio. The dome spans 200 ft without need of interior supports.



CONCRETE ARCH RIB forms the backbone of Yale University's unconventional hockey rink at New Haven, Conn. Cables running from the rib to the side walls support the roof.



INCLINED PARABOLIC ARCHES span about 265 ft on this suspension-type roof of Berlin's Congress Hall, Germany. The roof deck stretched between these arches consists of 2¾ in. thick prestressed concrete.

In heating also, there were no great changes from existing trends. But there was evidence in 1958 that research is bringer solar heating of buildings closer. At least four solar-heated research houses were built last year, in an attempt to make this type of heating more commercial (ENR Oct. 23, 1958, p. 30). Results to date look promising.

A record was set last year for another type of heating. A 550-ton air-to-air heat pump was installed in a nine-story office building in Columbus, for heating and cooling. It is the largest heat pump ever used.

• **Lessons from failures**—1958 was not without setbacks. Several building fail-

Towed on its own pneumatic tires.
Completely new Model 873 Finisher has proved its superior performance in paving city streets, alleys, parking lots, driveways, playgrounds, highway shoulders, highways and many other jobs.
New folding hopper in raised position.
NEW BARBER-GREENE MODEL 873 FINISHER

paves on crawlers . . . travels on rubber

With crawler traction and flotation for the variety of bases encountered in paving all types of jobs—including parking lots, driveways, playgrounds, etc.—and trailed at truck speed on its own hydraulically retractable pneumatic tires, this new finisher includes advancements never before available.

Unmatched tamping, leveling and thickness control principles of the larger Barber-Greene Model 879-B Finisher.

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CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

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NEW BUILDING for Washington *Star* achieves interesting curtain wall effect with colored Marietta precast panels framed by white horizontal and vertical trim. Faulkner, Kingsbury & Stenhouse, Washington, D.C., architects; Gongwer, Krass and Webb, Washington, D.C., structural engineers; Charles S. Leopold Engineers, Inc., Philadelphia, Pa., mechanical engineers. The Charles H. Tompkins Co., Washington, D.C., general contractor.

• By blending size and color of exposed aggregates, Marietta produces Marzaic precast wall panels in hundreds of shades and textures. Quartz and granite or ceramic tile can be used with gray or white cement in a concrete matrix to achieve the color effects you want. Broomed finish panels in gray or white also produce a pleasing appearance.

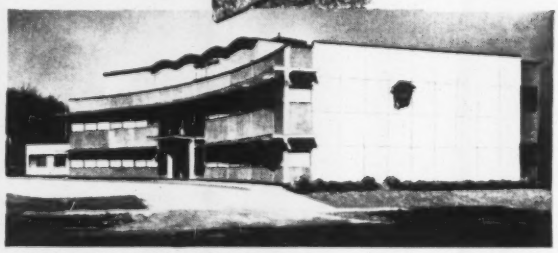
In the *Star* Building, light gray Marietta concrete wall panels with exposed quartz aggregate are used above the first story. Horizontal and vertical trim is of a lighter color.

The Medusa Building features green panels with green-colored aggregate on north and south curtain walls . . . contrasts this with white Marietta panels with exposed white chips on east and west walls.

In addition to giving you complete freedom in creating desired effects, Marietta precast wall panels go up fast — save time and cost. It's no trouble to erect up to 4,000 sq. ft. of finished, insulated wall in 8 hours. And, insulated Marietta sandwich panels give a "U" factor of 0.14.

Write for complete architectural specifications and information about color and texture possibilities with Marietta wall panels.

YOU can enclose wall areas in half the time, cut costs up to 30% with Marietta precast concrete wall panels.



MARIETTA WALL PANELS in headquarters building for Medusa Portland Cement Co., Cleveland Heights, Ohio, are suspended from cantilevered lift-slab floors. No grid supports are used. Ernest Payer, A.I.A., architect; Brown Construction Company, general contractor.

THE

Concrete Corporation, Marietta, Ohio

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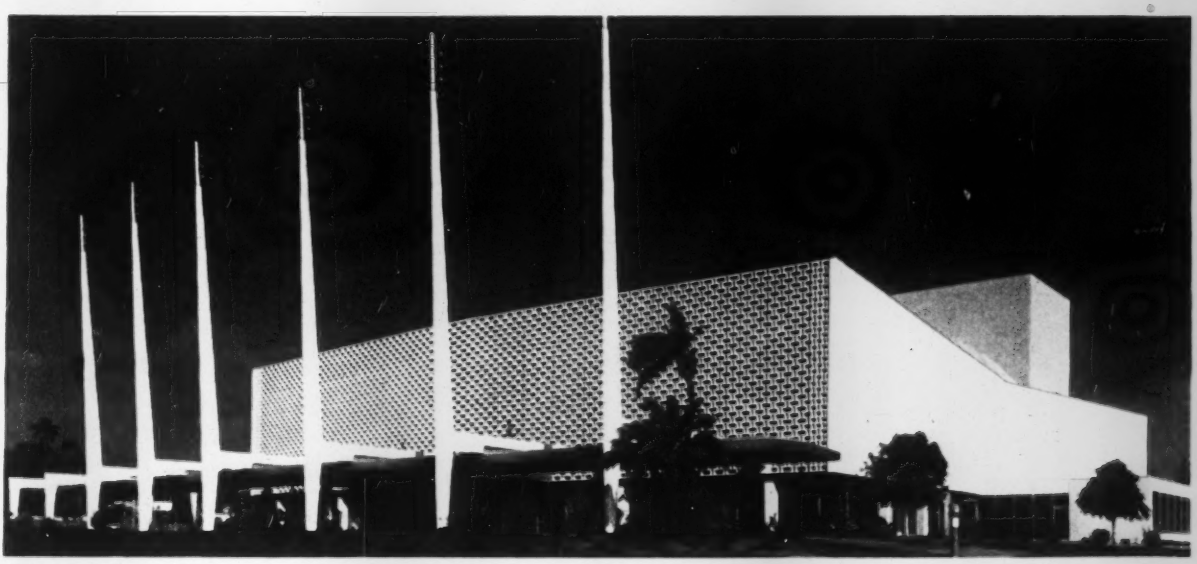
GIANT LOUVERS, 14 ft high and 22 in. wide, shield Reynolds Metals Co.'s new office building from the Virginia sun. The 880 louvers operate automatically.



BEEHIVE GRILLWORK of precast concrete and six 72 ft long pylons make an imposing facade for Santa Monica's civic auditorium. Inside the building is the nation's largest "floating" floor.

ures and a tragic school fire revealed shortcomings in building practices.

On Sept. 6, the steel frame of an 11-story building being erected for Union Carbide Canada Ltd. in Toronto collapsed. Measuring 215 ft in length by 65 ft in width, with no interior columns, the framing was essentially complete and concreting of the floors had barely started when it collapsed in the longitudinal direction.

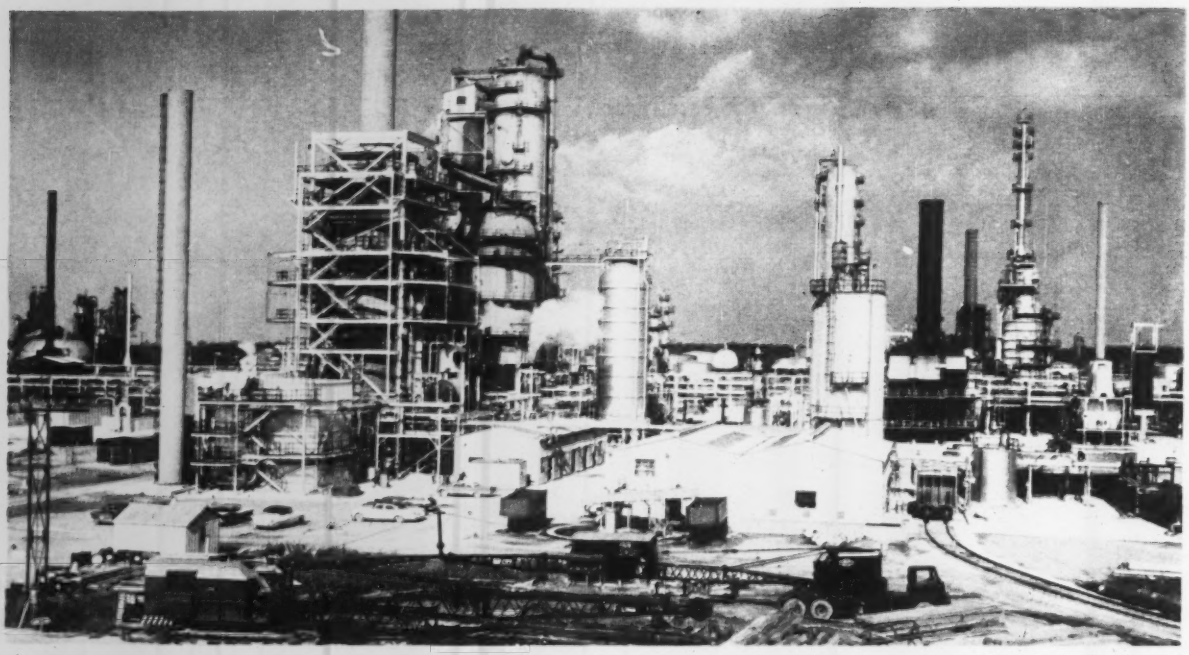
Consulting engineers investigating the failure reported that high winds had triggered the collapse. They noted: "Although temporary bracing was installed by the steel erector, it was insufficient to withstand the force of wind at a crucial stage in the building's erection." (ENR Jan. 8, 1959, p. 23).

Near Montreal, a newly completed, 5-story, reinforced concrete building on cast-in-place piles had to be demolished because it developed a severe tilt. This failure points up the need for checking the adequacy of foundations before the superstructure is started.

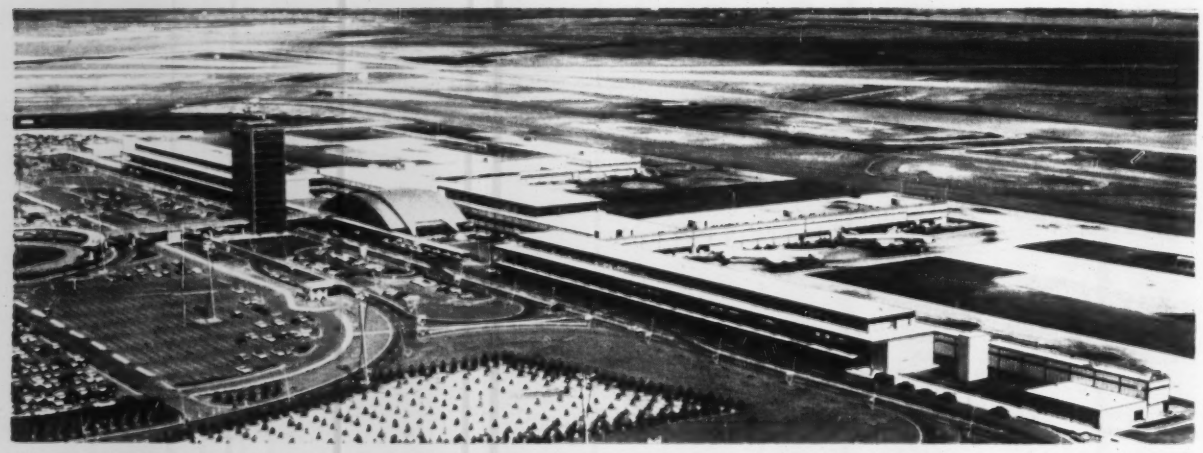
In New York City, a crane fell into the deep excavation for the foundations of a 60-story office building and damaged a heavy prestressed steel brace. This beam had to be removed without disturbing adjoining heavily loaded members. The replacement was cooled with dry ice to shrink it enough to fit and become prestressed on expansion.

A fire in a Chicago school on Dec. 1 took 93 lives and sent the nation into a frenzy of investigation of local schools.

(*Turn the page*)



INTEGRATED REFINERY geared for straight-through manufacture of a diversity of petroleum products. Standard Oil Co. of Ohio owns the Toledo refinery.

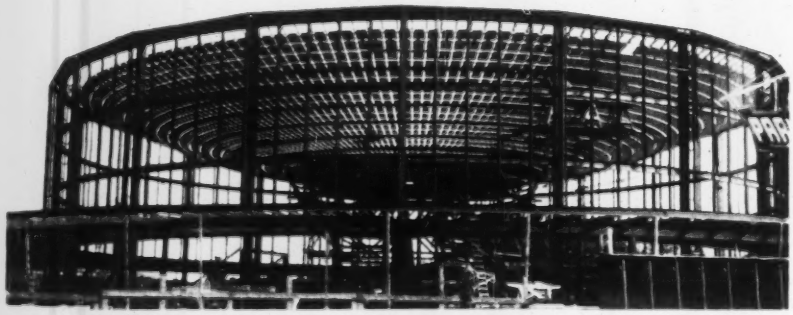


INTERNATIONAL AIRPORT at New York City has two more new buildings, as seen in this aerial view; they are the International arrival and Airline Wing buildings.

Reports early this year indicated some schools in most communities lack adequate fire safety.

In a great many cases, unsafe conditions exist because the schools are old, predating building codes requiring adequate fire protection, and the codes either are not made retroactive to older buildings or are not enforced. Also, communities were unwilling to pay the small additional cost for sprinklers and fire exits.

The Chicago fire answered the question: Is the saving worth the risk? It should serve as a reminder whenever that question is raised.



SAN ANTONIO AUDITORIUM has a saucer-shaped roof. It is supported by cables suspended from the outer compression ring to a truss ring at the center.

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"Piggyback" design puts load weight over the rear wheels of the John Deere "840" Diesel—gives the unit high maneuverability that speeds up cycle time.

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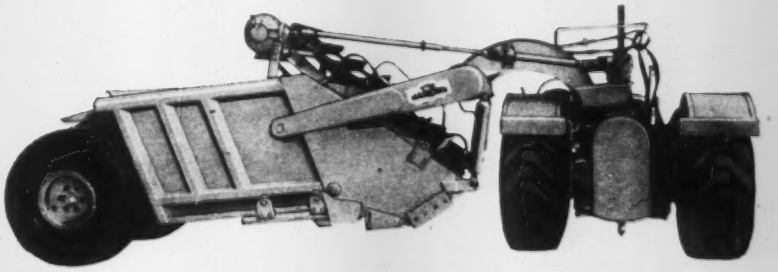
Driven by "live" independent power-shaft, the constant-speed power elevator keeps right on snapping earth up and off the blade, regardless of tractor speed. Turning radius: about 22 feet.



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U.S. cast iron PIPE

FOR WATER, SEWERAGE AND
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but better than ever today!

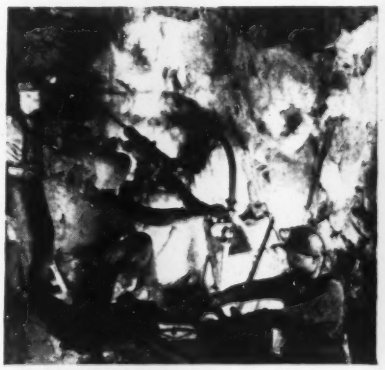
Modern technology plus mine-to-line control insures top quality of U.S. Cast Iron Pipe

Our water today is made so universally pure and wholesome no American ever doubts its quality.

This is a tribute to the forward-looking water officials who plan and administer the nation's water systems... and their suppliers.

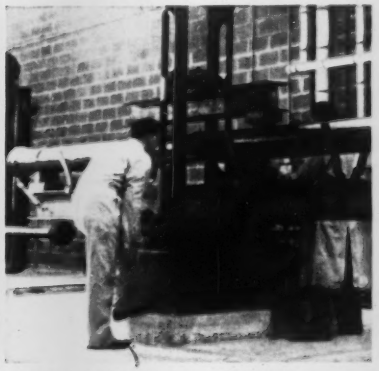
For example, U. S. Pipe controls every step from mining to shipping ... uses every possible quality check to make sure its product measures up to the heavy responsibility placed on it.

This close and painstaking supervision insures the unvarying high quality and dependability of U. S. Pipe—both indispensable to a product that plays so big a part in protecting the nation's health.



GOOD PIPE BEGINS HERE... At one of U. S. Pipe's mines near Birmingham, where high grade coking coal, essential to quality, is mined.

PIPE TAKES SHAPE... Molten iron in this rapidly rotating mold assumes its form as pipe—one of many manufacturing steps.



TESTING STRENGTH... Pipe specimens are periodically subjected to more brutal treatment in laboratory than they will receive in normal service.

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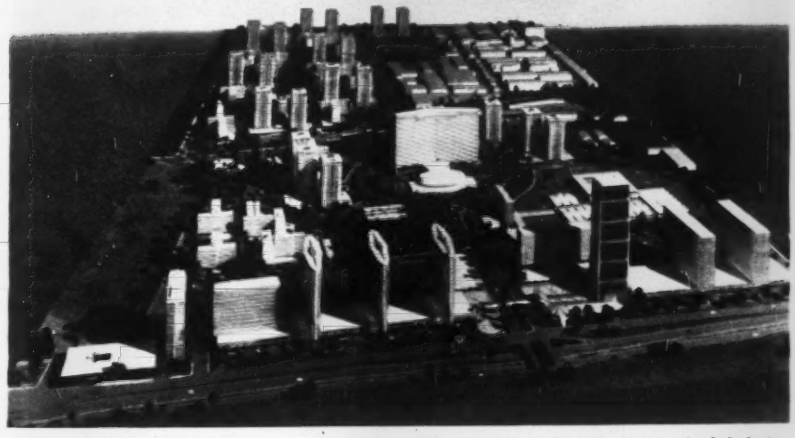
Major Building Projects



U. S. NAVAL HOSPITAL at Great Lakes, Ill., an 800-bed project, is scheduled for completion in 1960.

Buildings—New England

• **Yankee Atomic**—Construction is at the half-way mark on Yankee Atomic Electric Co.'s 134,000-kw nuclear power plant at Rowe, Mass. The project will cost about $60 million. The reactor is housed in a 125-ft-dia. steel sphere.

• **Generating plant**—Work has started on the first unit of Montaup Electric Co.'s generating plant at Somerset, Mass. The first unit will cost $20 million and generate 600,000 kw. Total cost is estimated at $120 million.

• **Yale hockey rink**—Yale University's unconventional hockey rink at New Haven, was completed last year. The roof of the structure is supported by cables sloped down from a central longitudinal reinforced concrete arch rib—the backbone of the building—to the side walls which bow out to provide arch action in resisting the inward pull of the cables. Wood nailers are fastened to the cables and wood plank roofs the building. The $1.1-million structure is called David S. Ingalls Rink.

Middle Atlantic

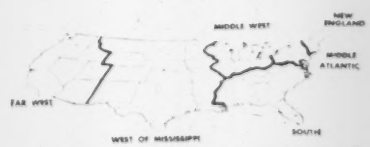
• **Time & Life Building**—The 48-story Time & Life building, located near Rockefeller Center, was topped out last December. The $70-million structure has a 587-ft tower set back from the street to provide a promenade and plaza; a seven-story L-shaped base block extends along the other two sides of the tower. Vertical bands of limestone run the full height of the structure with glass and aluminum between. Completion of the new building is scheduled for late 1959.

• **New auditorium**—A $17-million auditorium with a retractable roof was under construction in Pittsburgh last year and will be completed in 1960. Built on a 20-acre site as part of a 30-acre cultural center, the structure is owned by the Public Auditorium Authority of Pittsburgh and Allegheny County. Its domed metal roof is 116 ft high at the center and is divided radially into eight leaves that will roll into nested position like multiple-leaf doors.

• **Washington redevelopment**—Preliminary work was started last year for the $500-million Southwest Redevelopment project for the District of Columbia. The Town Center and two apartment houses will be constructed this year. A 402-unit apartment house was completed in 1958.

• **Indian Point power station**—Consolidated Edison Co. of New York's nuclear power plant, Indian Point, N. Y., is two-thirds completed. December, 1960, is still the finishing date. The $90-million plant will produce a maximum 275,000 kw combining the reactor output with oil-fired superheating.

• **Manhattan bank**—Steel erection is 25% completed for Chase Manhattan Bank's $130-million, 60-story office building in New York City's financial district. The structure will have a steel frame and glass curtain walls.



The regional breakdown.

• **Apartment project**—A 30-story, $20 million apartment house, known as Penn Towers, is going up in Philadelphia. It will have a million sq ft of floor space to include 900 apartments; and 700 of the units will have terraces. Completion date is 1960.

• **Building over building**—The old 11-story Bankers Trust Company structure at 529 Fifth Avenue, New York City, is being replaced by a new 19-story glass and aluminum bank and office building without disturbing the present ground floor bank occupancy. A large truss of the new 19-story steel frame will bridge over and provide suspension type support for a new tier of steel above the older skeleton. The bank will remain in its quarters throughout the entire construction operation.

• **Tower of glass**—The Corning Glass Works Building in New York City, will be completed this Spring. The structure is 28 stories high and contains 365,000 sq ft of office space. The exterior is glass.

• **First National City Bank**—The first National City Bank of New York is building a $50-million, 41-story office building at 399 on New York City's Park Ave—next door to the Seagram Building and across the street from Lever House. The facade will be of glass and aluminum, with structural columns covered in a gray lime-stone bound with metal. The building is scheduled for completion in 1961.

• **Union Carbide headquarters**—Construction is progressing on the Union Carbide Corp.'s new $46-million home office building on Park Avenue in New York City. The exterior will feature stainless steel mullions and gray tinted glass. Three-quarters of the 52-story office building will sit over the railroad tracks at Grand Central terminal. Completion is scheduled for 1960.

• **Air Force housing**—A 1,685-unit family housing project is under construction at Plattsburgh Air Force Base, New York. Already occupied are 180 units. All buildings will have wood frame exteriors. Air Force is spending $27 million for the project.

• **New York City Housing Authority**—Last year the Housing Authority let $110 million in construction contracts, completed 5,446 dwelling units, started 7,632, and was working on a total of 15,184 at the end of the year.

• **100 Church St.**—This $28-million, block square office building containing a million sq ft of rentable space, was completed in July, 1958. Exterior of the 20-story structure is an alumi-

MISSILE PLANT for Convair Astronautics is the free world's largest plant for integrated research, development and production of long-range missiles.

num and blue tinted glass facade with blue brick spandrels between.

• **Gold skyscraper** – A 34-story skyscraper with a gold anodized aluminum exterior, was completed in New York City last year. The 582,000 sq ft structure cost more than $15 million. It has a bolted steel frame.

• **Insurance building** – The Prudential Insurance Company of America is building an office structure in Newark that will be completed by November, 1960. The $15-million building will have marble exterior walls with granite trim, cover an area of 750,000 sq ft.

• **Medical center**–Construction is underway on a $16.5-million medical center in Baltimore. It will be completed by this July. The project will include a general hospital, an obstetrics-gynecology hospital, a medical research laboratory, two residences, a school of nursing and a service building.

• **Airline terminal**–Finishing touches were added last year to the $30-million International Arrival and Airline Wing Buildings at Terminal City, New York International Airport. The structures are steel frame and glass walled.

• **Guggenheim Museum**–Almost completed is the Guggenheim Museum in New York City, a $3-million reinforced concrete building with a spiral ramp instead of conventional floors. The ramp makes six turns rising 11 ft per turn. Works of art will be displayed along the curved walls.

• **110 William St**–A 31-story reinforced concrete office structure is under construction in Manhattan's insurance district. The L-shaped frame will be linked with an existing 20-story building (now stripped to its steel skeleton) and both units will be integrated into a unified structure. The facade of the combined structure will be of aluminum and glass. Completion is scheduled for this summer.

• **GSA projects**–The General Services Administration, Washington, D. C., awarded foundation work contracts for the $46-million Central Intelligence Agency Headquarters Building, Langley, Va., and the $36-million Museum of History and Technology, Washington. Bids for construction will be taken this year. GSA will also advertise for bids on the $14-million Federal Office Building and the $19-million twin additions to the Natural History Building. Both are in Washington.

Buildings—South

• **Giant louvers**–Reynolds Metals Co.'s new office building in Richmond has a system of 880 giant automatic aluminum sun louvers. The 14-ft-high and 2-in.-wide louvers shield the eastern and western glass faces of the four level structures from heat and glare, and reduce air-conditioning load. The $11.5-million building makes extensive use of aluminum, both exterior and interior.

• **Steam power plant**–Thomas H. Allen electric generating station—the largest steam power plant ever authorized at one time by any municipality—went into initial operation for the city of Memphis, Tenn. in November. The $121 million plant has a total nameplate capacity of 750,000 kw and will supply electrical power demands for Memphis and surrounding Shelby County.

• **Glass plant**–The new glass container plant for Owens-Illinois Co., was completed in Atlanta last February. It cost more than $15 million.

• **Aluminum plant**–Reynold Metals Co.'s $70-million reduction plant at Listerhill, Ala. is completed. The new plant is the largest of Reynolds' seven aluminum reduction or smelting plants; it has an annually capacity of 112,500 tions of primary aluminum. The huge plant's equipment foundations were built with 12,000 precast concrete pieces. Work has also begun on the expansion of the adjoining alloy plant. Cost is estimated at $65 million.

• **Cement plant**–A multi-million dollar cement plant with an annual production capacity of 10 million bags of cement was finished for the Lehigh Portland Cement Co., Miami, Fla. The main storage building has a roof of 916 precast concrete slabs supported by 39 beams. The structure is 864 ft long, 100 ft wide and 77 ft high.

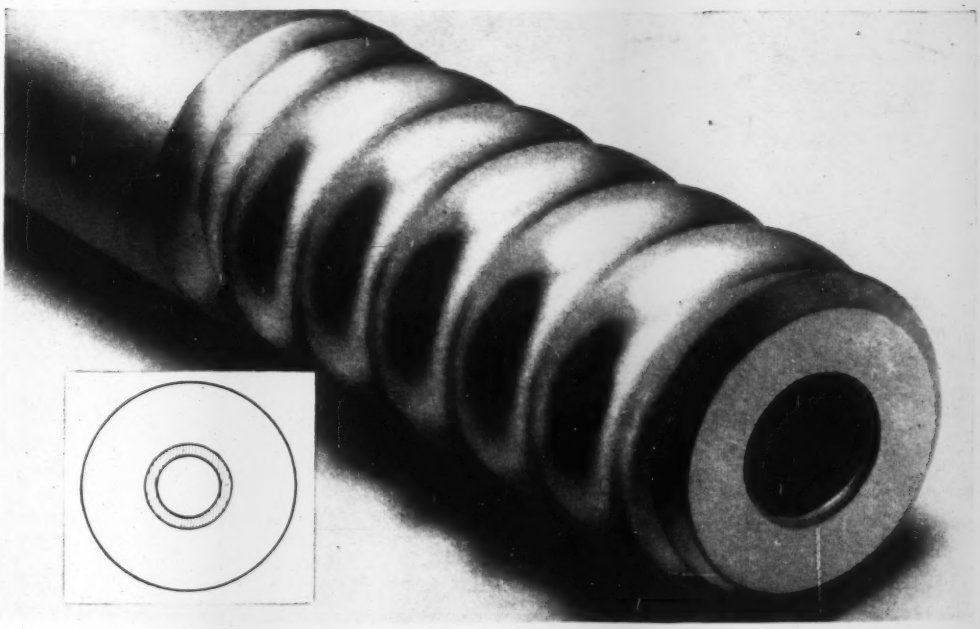
• **Miami airport**–Begun as a $12-million project in 1956, Miami's International Airport will cost an estimated $28-million before it is completed a year from now. The change in plans results from efforts to keep up with increasing air travel. $6.9 million worth of contracts were awarded in 1958. The two-story semi-circular terminal building is 130 x 1,200 ft long with five fingers, each 700 to 1,000 ft long.

• **Terminal and plant**–The $15-million Burnside Bulk Marine Terminal and the adjacent $55-million Ormet Corporation alumina plant at Burnside, La., were completed last month. The terminal, a new facility of the Port of Baton Rouge, is the largest facility for handling bulk cargo in the Gulf Coast area; its rated annual capacity is in excess of four million tons. The alumina plant processes 700,000 tons of bauxite —aluminum's basic ore—per year.

• **Virginia airport** – Civil Aeronautics Administration, Washington, D. C. let the first contracts for the Washington International Airport, Chantilly, Va. Estimated cost is $103.5 million.

• **TVA power plants**–The Tennessee Valley Authority steam power plant at Johnsonville is being enlarged to house four additional units of 150,000-kw capability each, two of which went into operation last year. The other two units are scheduled to go into operation by July, increasing the capability of this plant to 1,350,000 kw. The powerhouse at Gallatin Steam Plant is similarly being enlarged by the installation of two units of 275,000-kw capability each, increasing the capability of this plant to 1,050,000 kw by mid-summer. Widows Creek Steam Plant is being enlarged by the installation of a 500,000-kw unit, the largest ever installed in this country, increasing the capa-

NEW ROPE THREAD MAKES UNCOUPLING EASY WITH SANDVIK COROMANT EXTENSION STEELS



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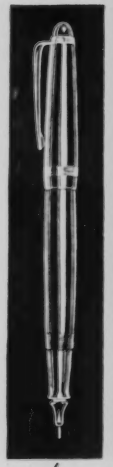

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bility of this plant to 1,250,000 kw. Plans are also underway to increase the capacity of the Colbert Steam Plant by the installation of a similar unit of 500,000 kw to bring the capability of this plant to 1,300,000 kw. Bids on this unit have already been received, and construction should start soon.

• **Navy Observatory**—The Navy Department began construction of its $60-million Naval Radio Observatory, near Sugar Grove, West Virginia. It will have a reflector about 600 ft dia.

• **Mile-long glass plant**—The Pittsburgh Plate Glass Co. last year completed a mile-long plate glass factory at Cumberland, Md. The $34-million facility is highly mechanized and has a production capacity of 50 million sq ft of polished plate glass per year.

Buildings—Mid West

• **Convention arena hall**—A $54-million circular convention arena building is under construction along Detroit's riverfront. The hall covers 17 acres of land area and contains five acres of floor space. It will contain four, 100,000-sq-ft exhibition areas, three of which can be combined into one large hall by retraction of separating partitions into roof construction; the structure has a maximum seating capacity of 14,000. Completion is expected by 1960.

• **Atomic plant**—Construction is moving ahead on the $75-million Enrico Fermi atomic power plant near Detroit. Key parts of the project: a reactor containment building, sodium storage and purification building, plant offices and control center; boiler house; water treatment plant, and turbine house. Completion is expected in 1960.

• **Chicago apartment**—This country's tallest reinforced concrete building, a 40-story, 565-ft-high apartment hotel in Chicago, was topped out last August and scheduled for occupancy early this year. Executive House is 60 ft wide by 150 ft long. It has a reinforced concrete frame with heavily reinforced concrete shear walls, spaced 40 ft c-c to resist wind stresses. The $6-million structure will be enclosed with stainless steel and glass.

• **Chicago's exposition hall**—Ground was broken last fall and construction got under way early this year on Chicago's $34-million exposition center. The 1,080x340-ft, two-story building will provide 300,000 sq ft of exhibit space in the exposition area, and an auditorium capable of seating 5,000.

• **Acme Steel Co.**—Construction on Acme's $25-30-million steel mill moved forward as scheduled. Target date for its opening is sometime in March. With an annual capacity of 450,000 initial ingot tons, the mill is the first facility on the North American continent to use the cupolas-oxygen blown converter process.

• **Nuclear power station**—Construction progress on the boiling-water reactor plant near Chicago passed the halfway mark last November. The $45-million, 180,000-kw power station under construction by Commonwealth Edison Co., Chicago, is scheduled for partial use late this year and full power operation by mid-1960.

• **Cleveland office building**—The East Ohio Building, a 21-story structure, of aluminum and glass curtain wall construction is nearing completion in Cleveland. It contains more than 300,000 sq ft of floor space. An adjoining 8½ story garage has parking space for 550 cars.

• **Cathedral dome**—The Cathedral of Tomorrow, Cuyahoga Falls, Ohio, is a 200-ft-dia dome shaped building. The roof structure of the 38,000-sq ft auditorium is supported by glued-laminated wood members. The dome spans the 220 ft without interior supports. Exterior walls are of aluminum, glass and plastic. The building was completed in 1958.

• **Cement plant**—Construction started last year on the new cement plant of Dundee Cement Co., Dundee Township, Mich. Annual productive capacity of the plant is rated at five million barrels of Portland cement. Full operation is scheduled for 1960.

Buildings—Far West

• **Los Angeles Civic Center**—The $350 million, 18-building Los Angeles Civic Center skyline began to take shape during 1958. First of the major units completed is a $24-million court house; included in its 826,000 sq ft are 96 court rooms and eight hearing rooms. Also completed is a $4-million central heating and refrigeration plant to service the civic center structures.

• **Kaiser Center**—Under way is a $45-million building complex in Oakland, Calif., centering around a 28-story structure. It will be headquarters for all Kaiser industries. The complex includes two-story shops and a five-story, 1,200-car garage.

(*Building projects continued p. 118*)

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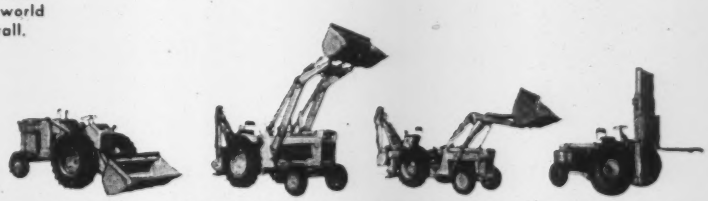

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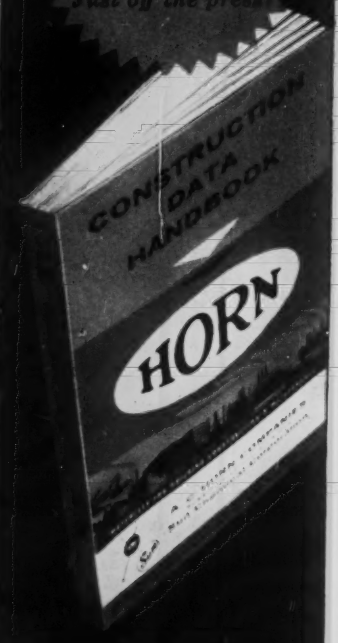

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UNION OIL building, Los Angeles has a diamond-shaped main tower, 13 stories high.

The office building will have 802,000 sq ft of usable office space, making it the largest west of Chicago.

• **California state buildings**—The state building program in 1958 totaled $135 million. Biggest projects were new state office buildings in Los Angeles, San Francisco and Fresno and a $32-million dormitory outlay to provide housing for 7,600 resident students at state colleges. Another 1958 highlight was the receipt of $11.5 million in bids for building the first phase of a $21-million medium security prison (California Men's Colony) at San Luis Obispo. The division of architecture proposes more than $147 million in state building projects during 1959 with particular emphasis on state college facilities.

• **Southern California steam plants** — Southern California Edison Co. placed a 220,000-kw generating unit in operation at the new **Huntington Beach steam station** in 1958. Construction will start in 1959 on the second and third units. Work is ahead of schedule on the $57-million **Mandalay steam plant** near Oxnard. Meanwhile the Los Angeles Department of Water & Power has put into operation the first unit of the $61-million **Scattergood steam plant.** The second unit is under construction and due for start-up in the fall. Each of these units is rated at 156,250 kw. Ultimate capacity of the proposed six units at Scattergood will be in excess of 1.2 million kw. Initial contracts have been awarded for the **Haynes steam plant** which will have an ultimate capacity of 1.4 million kw.

• **Crown Zellerbach Building** — Steel erection was completed on the 20-story $15-million building Crown Zellerbach Corp. is constructing in San Francisco to house its headquarters staff. The building will have an exterior of glass and aluminum and 255,000 sq ft of floor area. It is slated for completion by next fall.

• **Tallest Los Angeles building**—At the end of the year steel frame work was up to the fourth floor level of the 18-story, $14-million California Bank headquarters building in Los Angeles. This will be the first Los Angeles structure of more than 13 stories since removal of the height-limit restriction in late 1957.

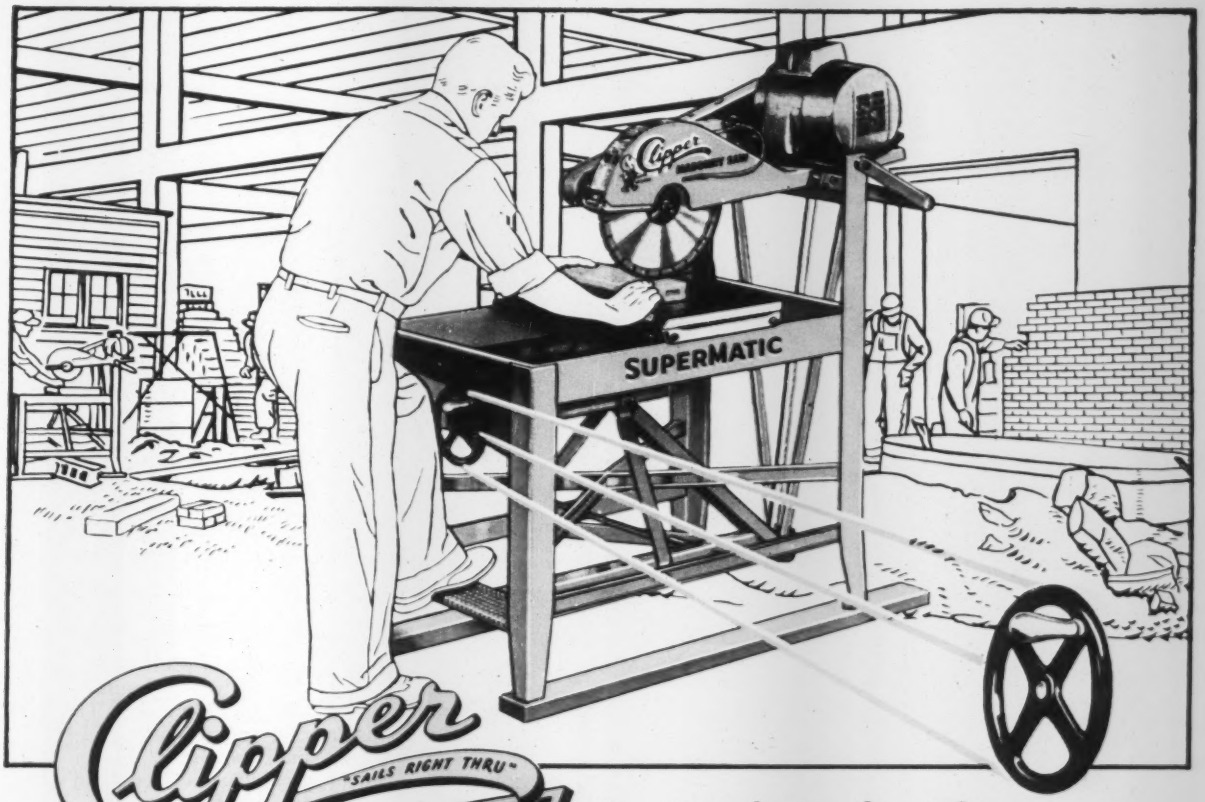
• **Union Oil Building**—Union Oil Co. in Los Angeles moved into its new $20-million headquarters in April, 1958. The Union Oil Center is dominated by a diamond-shaped main tower, 13 stories high and containing 250,000 sq ft of office space. It also includes two other office structures of three and four stories each. A two-story auditorium is connected to the main tower by two post-tensioned concrete pedestrian bridges that span the street.

• **Kaiser Steel**—Just completed is a $214-million expansion program at Kaiser Steel's Fontana, Calif., plant. Major facilities now in operation include 90 coke ovens, a second sinter plant, a fourth blast furnace, three oxygen steelmaking furnaces, 10 new soaking pits, a universal slabbing mill and an electrolytic plate line.

• **Hilton project**—Construction was underway in 1958 on a $20-million Hilton hotel and office building in San Francisco. The 18-story hotel section will be connected to the 22-story office building on the ground floor. The hotel will have 1,200 rooms. The entire project is scheduled for completion in 1961.

• **Factory splendor**—Ornamental grillwork, both exterior and interior, distinguishes the Stuart Co.'s new pharmaceutical plant and office in Pasadena. The building is one story in front, two in back, and is cantilevered over a pool utilizing a drop in the site. The 400-ft-long facade is punctuated by a gilt colonnade with metal decorations. The structure cost $1 million.

• **Telephone building** — Pacific Telephone Co. will spend more than $181 million in Los Angeles county during the next two years for new buildings, equipment and service improvements. Biggest construction job to get under way in 1959 will be an eight-story, 144,000-sq ft communications center which will cost about $14 million.



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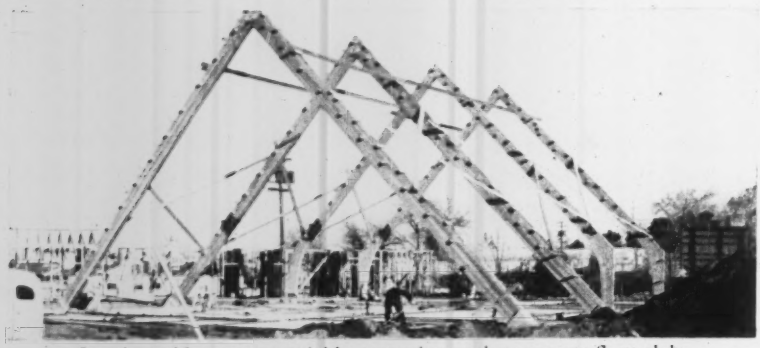
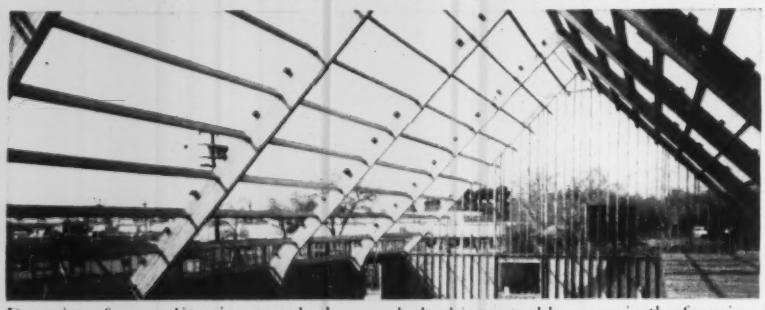
Tectum Deck Helps Save $8400

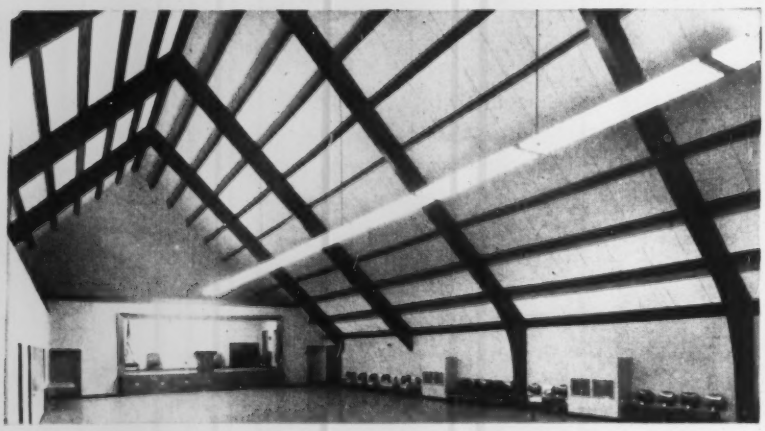
Specifications for the A-shaped B'Nai Jacob Temple, Bakersfield, California, were changed midway during the planning of the building. 2½" Tectum roof deck material and laminated beams and wooden purlins were substituted for a total savings of $8400. Tectum's contribution was its unique combination of structural, insulating and acoustical values — a single material with a single erection cost for multiple benefits. The photos illustrate the 3 basic steps of construction — simple, safe and completely satisfactory.



Laminated beams are quickly erected over the concrete floor slab



Framing for auditorium and classrooms. Wooden 2 x 10 purlins are bolted into steel hangers in the framing. Tectum is nailed to these purlins.



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Architect-Engineer: Charles H. Parker. *Contractor:* A. D. Sinclair.

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. . . Major Building Projects

valued at $30 million, were under way during 1958 as part of $100-million program converting the former Camp Cooke Army Base on the central California coast into a Strategic Air Command missile center.

• **Santa Monica Auditorium**—The Santa Monica Civic Auditorium, which features the nation's largest "floating floor," was completed in mid-1958. About two-thirds of the auditorium floor is an hydraulically-operated tilting platform which lowers at the stage end and rises near the rear of the house for an over-all difference in elevation of 5 ft.

• **San Diego steam plants**—Third and final unit of the $50-million Ecina Power Plant of San Diego Gas & Electric Co. was put into operation last August. Each unit of steam generating plant has 106,000 kw capacity. Meanwhile, construction on the first unit of the $25-million **South Bay Power** Plant started in October, 1958.

• **Giant missile plant**—Convair-Astronautics has a new $40-million Kearny Mesa plant near San Diego. The facility includes six major buildings, 14 smaller ones, and contains 1.2 million sq ft of floor space. It is the free world's largest plant for integrated research, development, and production of long-range missiles and space vehicles.

• **Norton Building**—The first skyscraper to use prestressed concrete beams is the 21-story Norton Building, now under construction in Seattle. The $12-million project calls for nearly 300 such beams, 70 ft long, 37 in. deep, with 30-in. flange, on 10-ft spacing.

• **Film co. development** — Twentieth Century Fox Film Corp. is building a $400-million development near Los Angeles. The extensive construction program is part of the movie studio's seven-year plan to convert 176 acres of its 285-acre property into a community of 56 apartment houses, four office buildings, a shopping center, a hotel, a theatre, an auditorium and a motion picture museum.

• **Pacific Gas & Electric Co.**—In 1958 the utility completed the fourth unit of its **Hunters Point steam plant** in San Francisco and the second unit at Humboldt Bay. Work was also started on the fifth unit of the Pittsburg steam plant, and work will start next year on the sixth unit. The two units at Pittsburg will cost $76.7-million. They will boost plant capacity to 1,310,000 kw.

• **Oregon Shopping Center**—Construction is well along on the $25-million

FIRST NATIONAL BANK of Miami headquarters is 18 stories high.

Lloyd Corp. shopping center development covering more than 30 city blocks on Portland's east side.

• **Ala Moana center**—The first increment of a $30-million to $35-million Honolulu shopping center is scheduled for mid-July completion. The Ala Moana center is a project of Hawaiian Dredging & Construction Co., Ltd. which is doing the work for its own wholly-owned subsidiary, Hawaiian Land Co. The completed center will have 1 million sq ft of store space plus parking on double decks for 7,000 cars.

• **Hawaiian project**—Standard Oil Company of California is building a warehouse, a shop, laboratories and offices in Oahu, Territory of Hawaii. The entire project will cost about $40 million.

West of Mississippi

• **Court House Square**—Construction of the $37 million Court House Square development in Denver is more than 65% complete. The May-D&F department store building was occupied in mid-summer.

• **Denver bank**—The 28-story First National Bank of Denver—Denver's tallest building—opened for business last summer. The bank occupies the first five levels of the $16-million structure; the rest of the 586,000 sq ft has been leased to private concerns.

• **Warren AFB**—Construction work on the $100-million Atlas missile base at Cheyenne, Wyo., is expected to be stepped up in 1959 with about $25 million worth of construction contracts due to be let early in the year.

(Story continues p. 123)

Lightweight Tectum complements lightweight Lamella framing in San Angelo Municipal Coliseum, San Angelo, Texas. Acoustics are ideal. Architects and Engineers: Mauldin-Ballard & Associates, A.I.A. Tectum Erector: United Materials Co.

Tectum Roof Deck Speeds Erection on San Angelo, Texas, Coliseum

Spanning 267 feet on a Lamella framing system, this beautiful Tectum roof provides a striking and effective acoustical dome. Here are the interesting facts for designers and contractors: Tectum goes down dry; erection time is sharply reduced; its relative lightness *leads to reduction of weight and cost of structural system.* Tectum is factory-finished, *normally needs no painting;* Tectum is precut to specification — *saves cutting on the job.* (Only the uppermost area, where framing converges, required cutting.) Large areas are covered quickly, economically.

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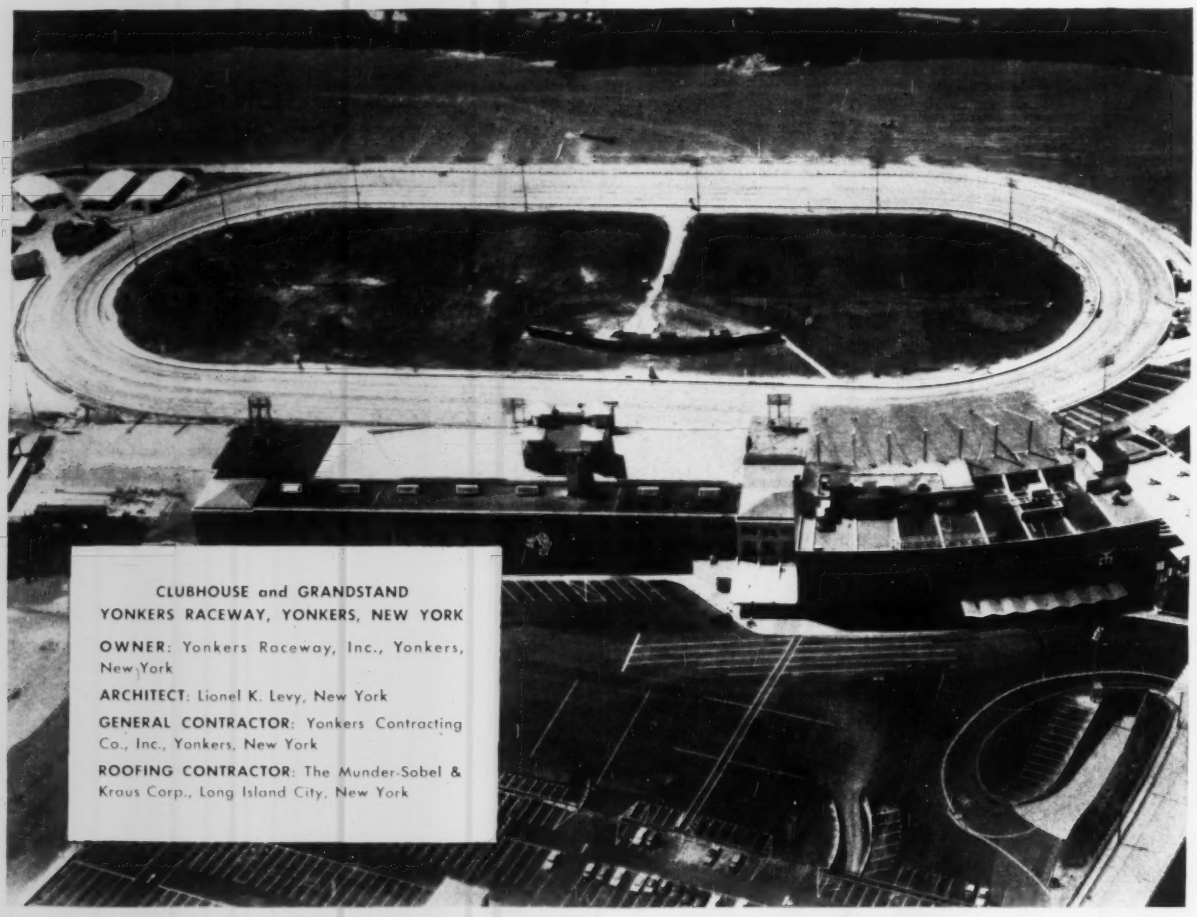

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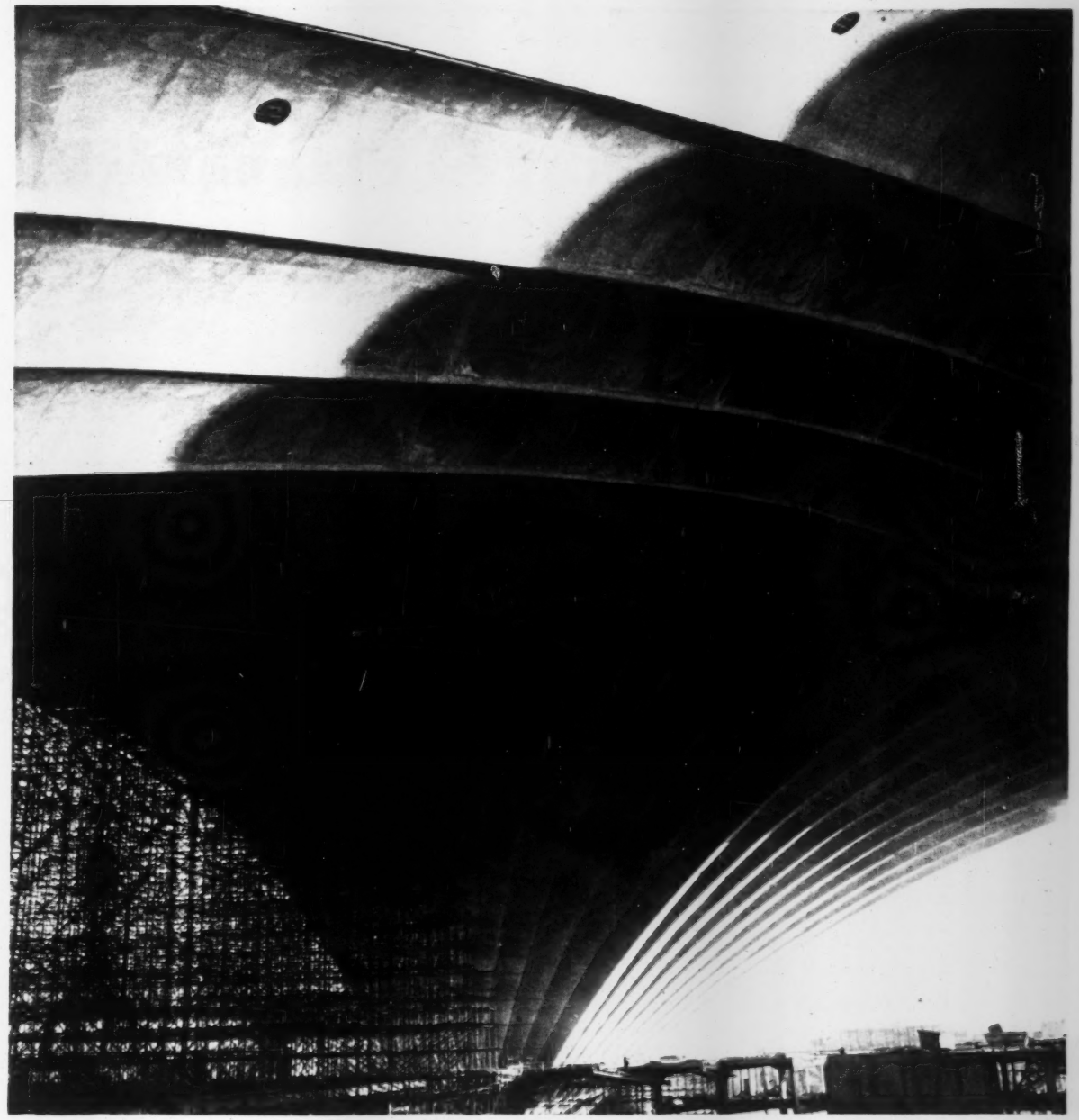


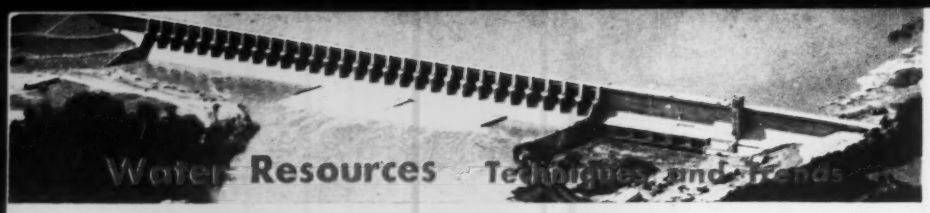
PALACE OF EXPOSITION under construction in Paris will set a new span record—720 ft between supports. The double-curved, thin-shell concrete roof is triangular in shape, supported at only three points.

• **Air Force Academy**—The U. S. Air Force Academy, Colorado Springs, was 92% completed at the end of 1958. The value of finished work jumped from $58 million to nearly $109 million in the 12 month period. Completed were 51 major contracts were completed and another 12 passed the 80% completion mark. The work under contract reached a total of $131.5 million.

• **Dallas center**—The $35 million Southland Center development in downtown Dallas neared completion in 1958. The project includes the 42-story Southland Life Tower, tallest office building west of the Mississippi River and the 28-story, 600 room Sheraton-Dallas hotel. Foundations also have been constructed for a future 36-story office tower adjacent to the Southland Life tower.

• **Texas auditorium**—The Public Service Board Auditorium, San Antonio, is a 132-ft dia. steel framed structure. The saucer-shaped roof is cable supported, with 11 15-in., steel cables suspended from the outer compression ring and connected to a 40 ft dia. truss ring at the center. There are 20 main cables which form sections, and a total of 200 cables in each bay. The building, scheduled for completion in 1959.

• **Magicland**—A $16-million, multi-purpose center is being built in Houston. Magicland will include apartments, a motel, a marineland and aquarium, a theatre, an ice palace and utilities.



Water Resources Planners Are

- **Comprehensive development is the response to increasing pressure for more complete use of river potential.**
- **Planning initiative is showing up at all levels—local, state and federal. It's a good sign for partnership exploitation.**
- **Industry is also showing greater willingness to play an active role in getting more for everybody from available water resources.**

An acceleration in the trend toward broad scale planning of water-resources development is confidently expected in 1959.

The moving influence is nothing more than demand crowding the potential. Demand has no limits. The available resources do.

The pressure, therefore, is toward more complete use. To meet it will require some uncommonly big thinking about our water resources. Big in the geographic sense—basin-wide, state-wide, region-wide, nation-wide, even continent-wide. Big in scope—encompassing all uses rather than merely the one or two with an easily redeemed price tag. And big in time—not only for next year, but for the next decade.

• **Comprehensive river use**—One of the most significant advances in over-all river planning in 1958 occurred at federal level when a rivers and harbors bill included a broadened water-supply concept. This allowed the Corps of Engineers and Bureau of Reclamation, for the first time, to provide water storage capacity for future needs in their new reservoirs.

Before this bill, the two agencies could include water supply storage for community and industrial use in dam plans only if there was a firm contract with the prospective user. Under the new statute, anticipated demand for municipal and industrial water can be considered at all stages of planning of storage projects.

Out of Texas (drought-plagued in recent years, but flood-washed in 1958 by way of contrast) came a real contribution to partnership-type, over-all river planning. The state-created Trinity River Authority came up with what is believed to be the first comprehensive basin-wide river program in the U. S. to be developed at local level. The plan involves cooperation of local, state and federal authorities.

It covers long-range development of the entire 18,000-sq-mi Trinity watershed, with due consideration for water supply, siltation control, flood control, navigation, pollution abatement and soil conservation.

Both previous and future efforts of federal agencies were taken into consideration. Corps of Engineers and the Soil Conservation Service are now carrying out their part of this over-all study.

• **Delaware planning**—A potentially good basin-wide plan is being molded for the Delaware River Basin. With the Philadelphia District of the Corps of Engineers as moderator, states, cities, industries and other interests in this highly populated watershed are hashing out differences.

After numerous public hearings up and down the river, and considerable study on its own, the District came up last year with a tentative plan—not fully formulated, but a start. And last month the District announced the location of 21 dams recommended for the basin.

This is actually a new start on the Delaware. Half a dozen years ago the Interstate Commission on the Delaware River Basin came up with its Incodel Plan, which failed to get necessary four-state approval.

• **New Columbia plan**—A major event in federal basin-wide river planning in 1958 was the Corps of Engineers' release in December of a proposed revision and extension of its master plan for development of the Columbia River watershed.

The scheme would add more than three million kilowatts of power and provide 22 million acre-ft of storage at a cost of $1.8 billion.

The new plan must leap several hurdles before any of it becomes a reality. Developed in the Pacific Northwest, it must be reviewed by Corps of Engineers officials in Washington. And before Congress authorizes any of the plan, its several controversial issues will be debated.

Many of the proposed projects could be built by private or local interests. But the larger ones will undoubtedly be federal jobs. Reason is that the most crying need is for more flood control—usually a federal preserve.

Power projects proposed in the new plan will probably be the last big block of hydro power to be constructed in the U. S. portion of the Columbia watershed.

On the main stream itself, 1958 saw the beginning of construction of the last federal project, John Day Dam. There are a couple of other possible locations—Ben Franklin and Wells. But local interests have seemingly been unable to put together a program for development of the sites, and it is not likely that the federal government will.

The start of work on John Day marks the beginning of the end of a great federal construction era on the Columbia.

It started a little more than 10 years ago with McNary Dam. Up to then, there had been a feeling that Bonneville and Grand Coulee generated more power than the area could absorb for many years. However, when rising power demand proved the assumption

Taking the Long, Broad View

OAHE DAM, biggest earthfill dam anywhere, was closed in a dramatic 22-hour, weekend earthmoving operation last August. Closure of the Missouri River dam took 67,000 cu yd of shale.

false, McNary was begun. Soon after came Chief Joseph and The Dalles both now virtually completed.

Local interests, however, are developing other Columbia River projects. The Priest Rapids and Rocky Reach projects are more than half finished, and Wanapum Dam is due to start soon.

• **Canada and the Northwest**—Another event with great potential for the Pacific Northwest may be near. Stirrings north of the border during 1958 indicate that Canadian development of water resources in the region might be imminent.

Exploitation in the Dominion could postpone for many years the coming need for big blocks of thermal power in the U. S. Northwest. Storage works in Canada could create great benefits downstream in the numerous Columbia River powerhouses.

Final agreement might not come for some time, even among the Canadians themselves, but first steps in this direction are almost sure to be made this year. There is more hope now for Canadian progress in Columbia development than there has been for many years.

• **Snake River debate**—One feature of the Corps' new Columbia basin plan—high Mountain Sheep Dam—keeps the pot boiling in the controversy over development of the middle stretch of the Snake River, in Oregon and Idaho.

The Corps apparently goes along with Pacific Northwest Power Co., a four-utility combine, which proposed a high Mountain Sheep dam last spring.

An earlier application by the utility group to build low dams at the Mountain Sheep and Pleasant Valley sites had been turned down by the FPC, which recommended construction of a high dam downstream at the Nez Perce site as better development of the middle Snake potential.

The Interior Department takes a third stand, upholding fishery and conservationist objections to either Nez Perce or high Mountain Sheep. Nez Perce, downstream from both the Salmon-Snake and Imnaha-Snake confluences, would keep spawning salmon out of both the Snake tributaries. High Mountain Sheep, in the short stretch of the Snake between the mouths of the two tributaries, would block only the Imnaha.

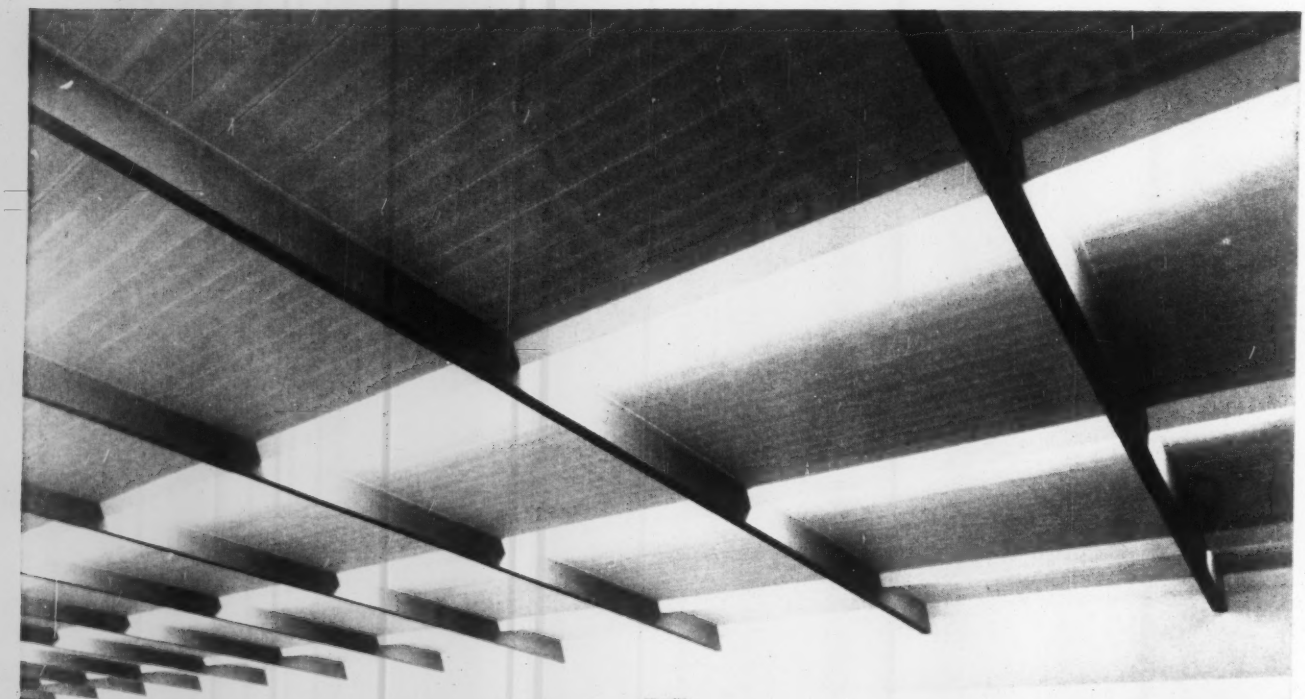
A few weeks before the Corps' North Pacific Division released the new Columbia plan, Interior Secretary Fred Seaton urged a moratorium on all Snake River dam construction below the mouth of the Imnaha until fish-passage problems were solved.

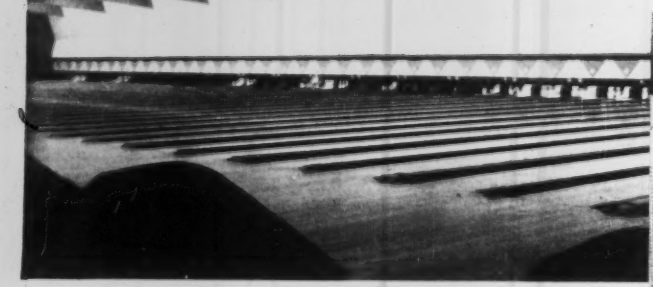
• **CVA?**—There were signs of renewed pressure by public power advocates to establish a TVA type of over-all federal power administration in the Columbia River basin. Sen. Richard Neuberger (D., Ore.) held a series of hearings in the Northwest late in the year to gather views on a highly controversial CVA bill. He will introduce it in Congress this year.

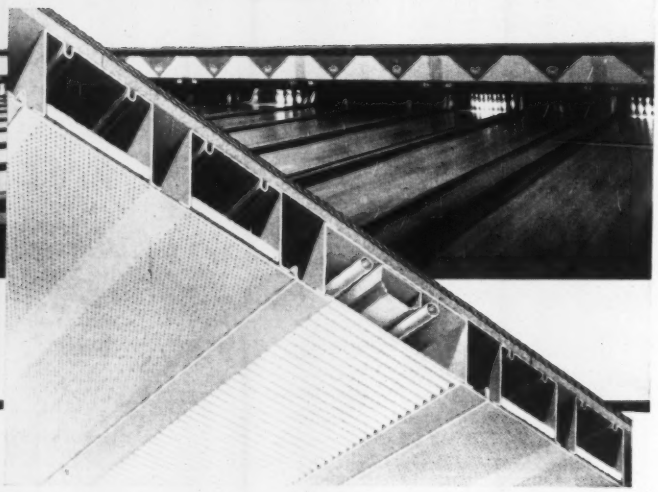
Columbia Valley Administration came close to realization during the Truman administration. As the Truman-supported Mitchell-Jackson bill, it was at one time in 1949 considered a 50-50 possibility for enactment. But it lost.

(Story continued p. 128)

Long Span M-DECK Produces







Interior View of The Satellite Bowl — a new bowling center in Inkster, Michigan. In this unique structure, the ceiling effect was achieved by utilizing Mahon M-Deck to provide the Structural Roof Unit, the Finished Ceiling Material, and the Acoustical Treatment. Campbell Engineering Co., Architects and Engineers. Campbell Construction Co., General Contractors.

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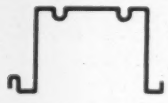
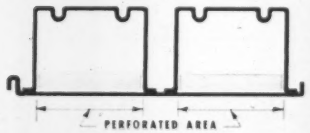
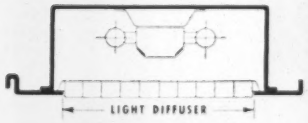


SECTION M1-OB
OPEN BEAM DEPTH 3", 4½", 6" or 7½"



SECTION M2SR (Acoustical)
CEL-BEAM DEPTH 3", 4½", 6" or 7½"



SECTION M1T (Troffer)
DEPTH 6" or 7½"

SECTION M2 (Acoustical)
CEL-BEAM DEPTH 1½", 3", 4½", 6 or 7½"

At Left: Cross Section of Long Span M-Deck Combined Roof-Ceiling with Troffer Lighting.

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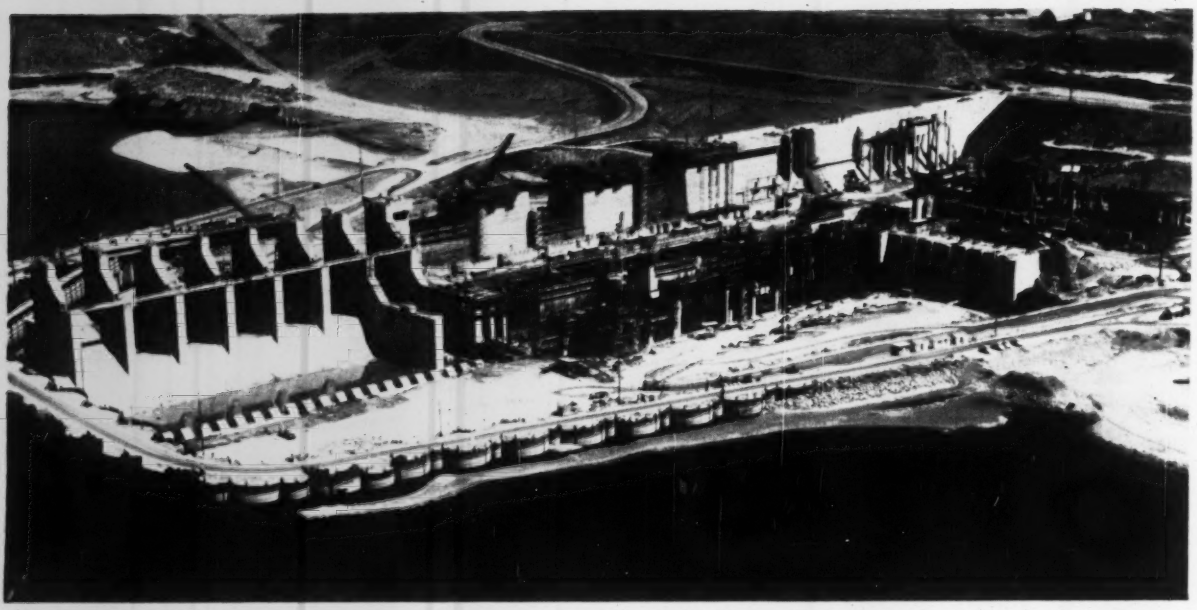


ICE HARBOR PROJECT, Corps of Engineers job on the Snake River in Washington, is more than a third finished. Another $10 million in contracts, including a 103-ft navigation lock, will be bid in April.

• **Pollution awareness** – There were signs from all over the country during 1958 of a growing awareness of sewage treatment and pollution problems and a spreading realization that something had to be done about it.

More progress in sewage treatment in the highly industrialized Ohio Valley was reported again by the Ohio River Valley Water Sanitation Commission. A year ago treatment plants were either in operation or under construction to serve 86% of the population served by sewers along the main stream Ohio. The figure has now climbed to 92%.

The mighty Mississippi, once thought unpollutable because of its great volume of flow, was shown last year to be no match for uncontrolled metropolitan sewage discharge. In the St. Louis area alone, over 200 raw waste outfalls load the river with the pollution equivalent of 5.25 million people (produced by 1.2 million people plus industry). Water samples taken at a point 125 miles downstream from St. Louis were found to contain 5,000 coliform organisms per milliter, the recommended Public Health Service limit for raw water before treatment for drinking. The city is making plans to remedy the situation (ENR Feb. 12, p. 17).

There was considerable pollution control activity at state and local level in Pennsylvania, Texas, Kentucky, Vermont, Washington, Tennessee, California, to name a few states.

But not all was bright. In at least one respect, net progress was still a loss. The latest Public Health Service inventory of sewage treatment facilities showed an increase in both number of communities and total population served by treatment plants. But needs for sanitary facilities have grown even faster, another PHS survey showed. Ten years ago, one-tenth of our plants needed replacement. In 1958, says PHS, the fraction had climbed to one-seventh.

The country's growing concern with air pollution gave rise last year to the first National Air Pollution Conference. Sponsored by the U. S. Public Health Service, the meeting drew 900 industry and government people to Washington. In evidence were concern about the dangers of unclean air and fear that the public might be stampeded into pressuring for legislation that would cripple industry.

• **Waste treatment** – Accomplishments in 1958 brightened considerably the prospects for beating several tough industrial-waste problems.

The Ohio River Valley Water Sanitation Commission began considering during the year a new and simplified way to control the concentration of untreatable chloride wastes in the Ohio. The scheme is simply storage of the wastes at the point of origin for later release in amounts and at times picked to avoid overloading the river. Producers of significant amounts of salt wastes would build impoundments sized to store the wastes for at least three months. This would permit discharge to be proportioned to stream flow so as to maintain a uniformly low concentration.

This method of regulated discharges need not be limited to chloride control. It could also help control other pollutants. And, in fact, ORSANCO is also considering the method for control of taste and odor-producing substances.

Another troublesome and expensive industrial waste problem appeared at least partly licked in 1958. Waste steel-pickling liquor was found cheaper to recover than to treat. Cost data from 18 months operation of a Blaw-Knox pilot plant indicated that it would cost considerably less to recover the waste liquor by the new Ruthner process than to neutralize and dispose of it. However, the new method is not self-supporting. It still costs more than the value of the liquor recovered.

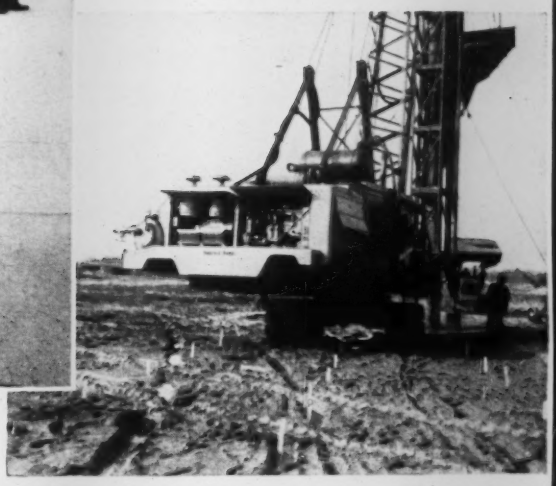
Defeat of a nylon-wastes problem in Pensacola, Fla., was disclosed by Chemstrand Corp. as the product of 2½ years of research and development. And the opening of a treatment plant at Bound Brook, N. J., designed after similar long and arduous work on the problem, to handle "waste that couldn't be treated," was a source of pride to the American Cyanamid Co.

These accomplishments typify what must be the approach to industrial waste problems—individual attack. The great number of highly individual processes—with more being added all the time—create correspondingly individual waste problems and rule out, of course, any standard treatment.

More important, these accomplishments are signs that industry—like other segments of society—is taking a broader

Breaking old asphalt with an I-R PB8A paving breaker operating off a 125-cfm Gyro-Flo. This compressor will handle two such breakers.

GYRO-FLO *in the news*



Driving a special-type pile driver as sand casings are placed for a bridge approach, this big 900-cfm Gyro-Flo replaced two smaller compressors.

On a pole setting job in rocky soil a utility company uses the highly portable 85-cfm Gyro-Flo and an Ingersoll-Rand PB6 paving breaker.

Emergency air power to a manufacturing plant is furnished by this 900-cfm Gyro-Flo, while the plant's stationary unit is being repaired.

Artifical snow system for the ski slope of an eastern state park is powered by these Ingersoll-Rand Gyro-Flo units . . . a 600-cfm and a 210-cfm.

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SEWAGE TREATMENT PLANT on the Hudson River in Yonkers, N. Y. was built for primary treatment only, but provision was made in the design for future addition of secondary treatment facilities if it becomes necessary.

view of the problem, is reaching greater awareness of the necessity to protect our water resources and is accepting the responsibility thrust on it.

A new sludge-burning development tried out in 1958 might prove to be of considerable significance in handling either industrial wastes or sewage. Chicago completed a year-long pilot study of the process, and preliminary indications were that it looked pretty good.

Called the Zimmerman process, after its inventor, the method oxidizes sludge under water—that is, without first being dried. Sludge and compressed air are subjected to high heat and pressure in a continuous flow through the system components. External heat is not needed except as a starter. After that the process is self-sustaining.

Excess heat of oxidation in the process may also be used for entirely unrelated purposes. A pulp mill under construction in Europe reportedly will produce enough process steam from the excess heat of its installation to make the sludge-burning operation self-supporting.

• **Big dams**—It was a year of notable activity in building and planning earthfill and rockfill dams. Both the "biggest" and the "highest" figured in the news.

The world's biggest rolled earthfill, the Army Engineers' Oahe Dam, located on the Missouri River near Pierre, S. D., was closed in a spectacular drama of men and machines during an August weekend. A fleet of 50 massive earthmoving machines got under way at 6 o'clock Saturday morning and during the next 22 feverish hours dumped and bulldozed 67,000 cu yd of shale into the narrowed river channel to choke off the flow. This forced the river through completed flood-control tunnels in the right abutment of the 91-million-cu-yd dam.

The world's highest earthfill, Pacific Power & Light Company's Swift Dam, on the Lewis River in southern Washington, was finished late in the year. First power was delivered in December. Swift's total height is 512 ft—including a 100-ft-deep cutoff trench excavated below the original stream bed.

Swift Dam's height supremacy among rolled earth fills is going to be short-lived. Two California dams will be higher—Trinity and Oroville.

Trinity, now under construction, will be 537.4 ft high.

California's Water Resources Department decided in November on earthfill for Oroville Dam. This key feature of the state's $1.6-billion Feather River Project will be 730 ft high—4 ft higher than Hoover, new highest in the U. S. The bottom 155 ft of its impervious core will be concrete, enclosing the project's powerhouse.

The newest and biggest of the sloping-core rockfill dams, Idaho Power Company's Brownlee Dam on the middle Snake River, was completed last month. This structure is 400 ft high and contains 7.5 million cu yd of material.

The world's highest rockfill dam, 445-ft-high Cougar Dam, is about a quarter complete. This structure, a Corps of Engineers project on the South Fork of the McKenzie River in Washington, has a vertical core. This type, in general, runs higher than the sloping-core type of rockfill dam.

The American Society of Civil Engineers' Power Division spotlighted rockfill dams at the midyear meeting in Portland, Ore. Seventeen papers were presented. The pattern was similar to that of a symposium held two years ago in Knoxville on arch dams.

Work on this country's highest concrete arch dam proceeded apace during the year. The Bureau of Reclamation's Glen Canyon Dam, on the Colorado River in northern Arizona, will be 700 ft high above bedrock. This height ranks it close to 726-ft-high Hoover Dam. Hoover is a gravity-arch type.

The contractor at Glen Canyon is laying the groundwork on this project for the fastest concrete placement ever. After concreting starts late this year, it is expected to reach a rate of 9,000 cu yd a day.

Not only rockfills and earthfills but dams of all kinds came in for some concerted attention on a worldwide scale in September. Dam experts from all quarters of the globe assembled in New York City for the week-long Sixth

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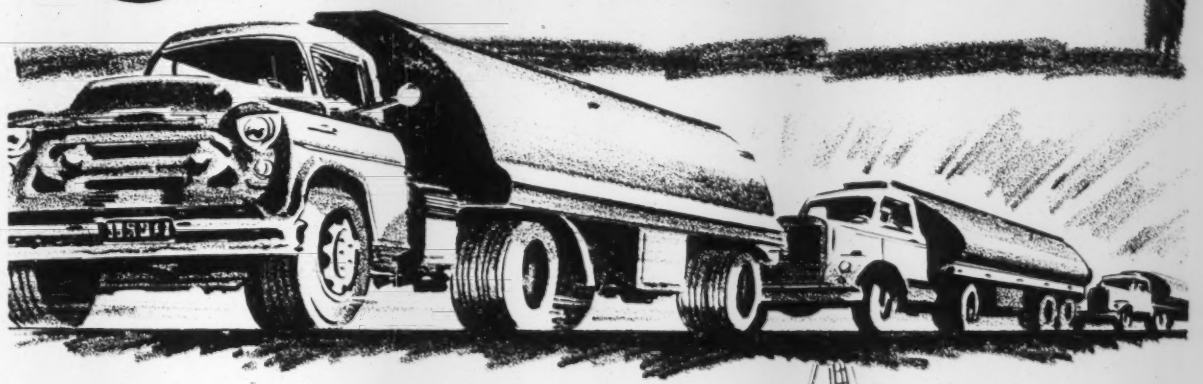

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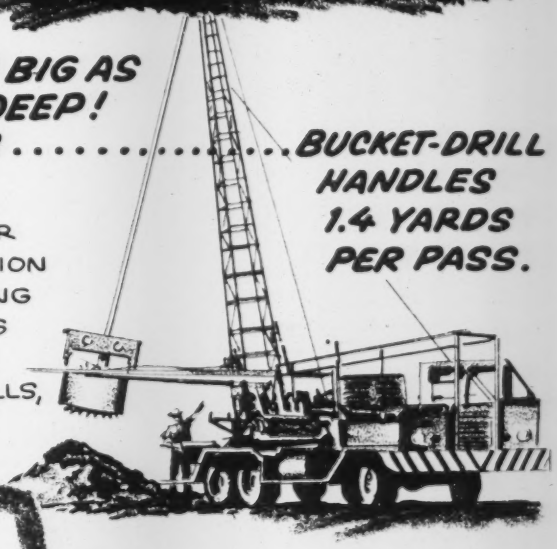

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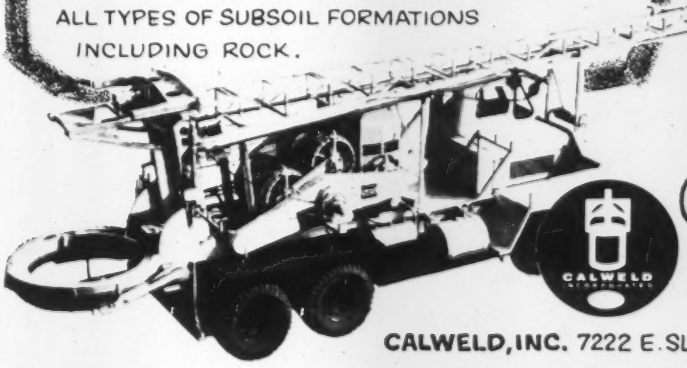

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Fig. 1

A hot-dip coating of bituminous material substantially reduces the effects of corrosive conditions, and adds to the service life of the pipe. In addition, a paving of asphalt to cover the inside crests of the corrugations (see Fig. 1) further protects the pipe from wear caused by erosive materials such as heavy sand and gravel in the stream. The paving covers the inside crests of the corrugations to a depth of ¼ in., minimum, and is spread over an arc-segment of 90 deg. along the entire length (see Fig. 2). Such paving not only protects the pipe, but also lowers the coefficient of roughness in the bore.

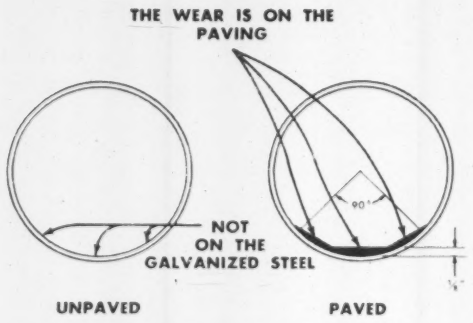

Fig. 2

All this and much more about drainage materials and design are fully discussed in a recent Bethlehem publication, Booklet 425-A, "Solving Drainage Problems." This booklet is crammed with illustrations, charts, tables, sketches, and nomographs to assist engineers and public officials alike in solving their drainage problems. It also includes some brand-new tables for evaluating flow friction. Ask your fabricator for a copy.

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BETHLEHEM STEEL

BETHLEHEM STEEL

TRINITY DAM, California's biggest dam project under way, will succeed Swift Dam, Washington State, as highest earthfill. The 537½-ft-high embankment will in turn be succeeded by another California earthfill dam—Oroville.

International Congress on Large Dams.

Some 130 papers and discussions at the congress fell into four general categories: dam heightening; stresses and deformations; compaction methods and moisture control; and cement additives and pozzolans.

The body decided to meet next in Rome in 1961.

• **Niagara power**—The free world's biggest hydroelectric power project—matching Grand Coulee's 2.2 million kw and the first U. S. project to include extensive pumped storage—began to shape up this year.

New York State's Niagara Power Project was beset by land acquisition difficulties, but moved ahead anyway. The still-unsettled land troubles stem from strenuous efforts of the Tuscarora Indian tribe to hang on to some 1,300 acres of reservation land needed for the power project's pumped-storage reservoir.

Power of all kinds got international attention in September. Forty-two nations, including several Iron Curtain countries, were represented at the five-day Canadian sectional meetings of the World Power Conference conducted in Montreal.

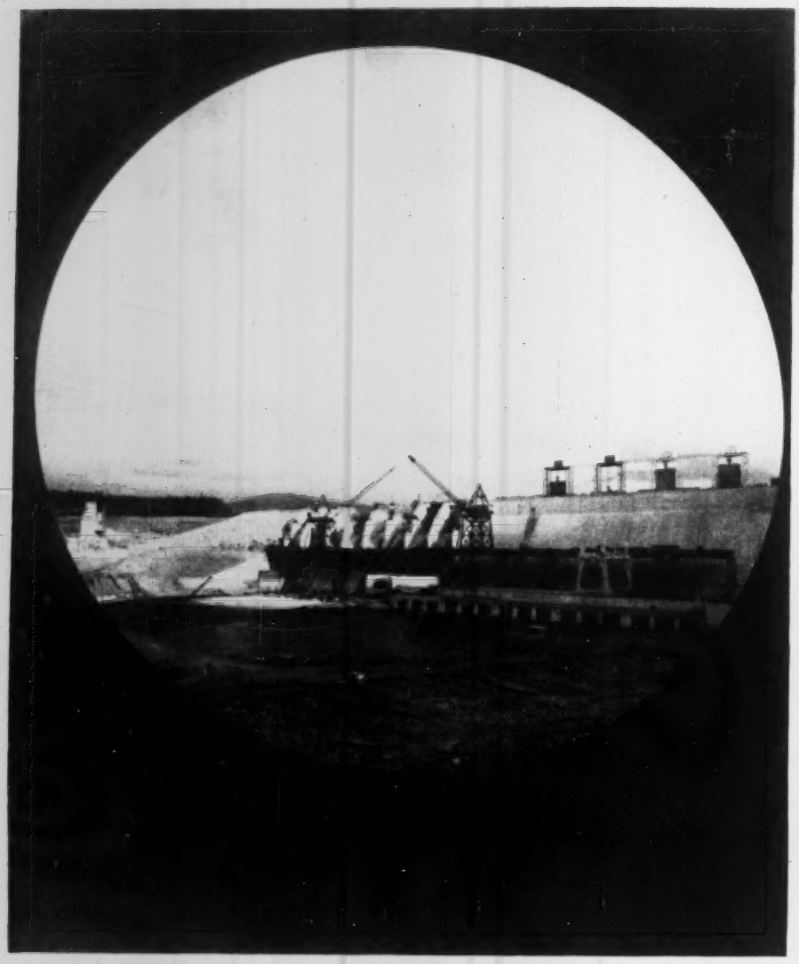
A recurrent theme was rising power needs in the face of dwindling power resources. The quest for answers seemed to lie in the direction of marginal energy sources (low-grade hydro power and poor quality fuels, for example) and better use of all power (integration of hydro, thermal and nuclear power, for example).

• **Nuclear power**—The U. S. nuclear power program continued with private development of various types of reactors for the Atomic Energy Commission.

There was pressure, however, for a stepped-up program. The Joint Congressional Committee on Atomic Energy unwrapped an $875-million plan in late summer to make nuclear power competitive by 1970. And early this year, an eight-man committee appointed last fall by AEC Chairman John McCone recommended a program that paralleled in some respects the plan offered by the Joint Congressional Committee.

• **Shipping hazard removed**—The biggest nonatomic blast was set off in April. 1,375 tons of high explosives were detonated to shear off two underwater peaks at Riggle Rock, in the inside passage to Alaska, 100 miles north of Vancouver, B. C. Situated in a 2,500-ft-wide narrows, the two peaks were reached through a 570-ft tunnel on shore, a 2,000-ft tunnel and a network of raises, drifts and sub-raises. The blast moved 200,000 to 300,000 cu yd of rock to clear a minimum depth of 47 ft and thus remove a fearsome navigation hazard.

• **Inland shipping**—Work on the billion-dollar program of replacement and improvement of Ohio River locks moved along during 1958. Five major jobs are under construction, at New



NOXON RAPIDS DAM, Washington Water Power Co.'s hydroelectric project on the Clark Fork River in Montana, has no more major contracts to be let.

Cumberland, Greenup, New Richmond, Markland and Louisville.

The power and seaway projects at the International Rapids Section of the St. Lawrence were virtually completed in 1958. The last cofferdam in that section was blasted in July to start the power pool buildup.

Completion of the entire St. Lawrence project including the downstream locks in Canada is expected to make it possible to open the seaway this spring into the Great Lakes ports for vessels up to 25 ft draft. Channel improvements to extend the deep draft accommodation all the way to Duluth, at the western end of Lake Superior, were continued by the Corps of Engineers.

Wilson Lock, whose single 100 ft lift will take river traffic past TVA's Wilson Dam on the Tennessee River, is well over three-quarters completed. It will replace two existing lifts totaling 90 ft.

Two old canal ideas showed signs of life in 1958. Canadian and American engineers studying an inland ship channel from Montreal to New York reportedly saw no insurmountable technical difficulties. Its possible effect on St. Lawrence Seaway traffic, however, was a question that would give Canadian authorities some cause for reflection.

Florida's congressmen planned to renew efforts this year to get federal money for the long-dreamed-of Cross-Florida Barge Canal from the Atlantic to the Gulf. Construction actually started on the project as a ship canal in the 1930's by the Works Progress Administration, but stopped when Congress cut off appropriations.

• **California water**—California's bold water plan is a question mark. After a good start on construction in 1957, the state's multibillion dollar program of developing its own water resources was virtually halted by water-rights and money difficulties. There is hope that the new governor will be able to get things moving again. However, there is some feeling that the state should call on the federal government to finance and build the needed works.

Need is becoming critical. With the Colorado Aqueduct reaching full development this year, southern California must look elsewhere for new supplies. Growth of the area will catch up with present water resources by 1970. And it will take a good 10 years or more to develop the aqueduct system from the northern California rivers—which at this time appear to be the only dependable sources.

Congress will be called on this year to resolve the question of who is to build California's Trinity River Project power facilities—the federal government or Pacific Gas & Electric Co.

At the invitation of the Eisenhower Administration, PG&E has offered to purchase falling water at the several Trinity project power sites. This, it is argued, would relieve the government of a high investment outlay and provide a tax base that otherwise would not exist.

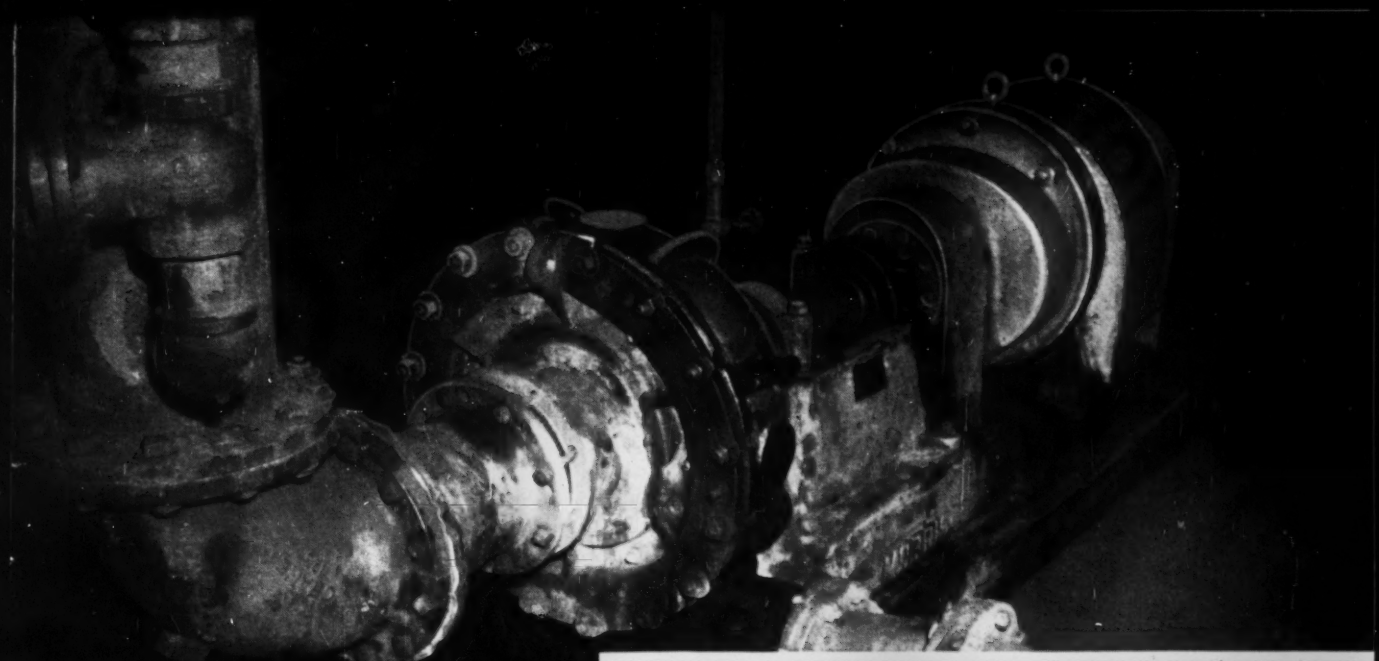
But the all-federal plan appears to have more supporters including California's two Senators. Whatever the decision, it should be made soon. If not, works now under construction will lie idle upon completion.

• **Computers**—The nature of problems to be solved in the water-resources field, particularly in connection with reservoir-yield studies, is resulting in a steady increase in computer use by planners. Another factor also pushing computer use in water studies is the availability of equipment already acquired for highway design. Computer owners and computer-service organizations are eager to get maximum mileage out of high-priced equipment.

• **First flood-plain zoning**—Memory of the 1955 floods stayed fresh in Connecticut last year. The state's Water Resources Commission was busy setting stream-encroachment lines under the Connecticut flood-plain zoning law, first effective one enacted by any state.

If memories needed refreshing elsewhere, there was high water around to do the job, notably in Texas last summer and the East and Midwest last month.

There is still no effective flood-insurance program in the country. But the Council of State Governments has not lost hope for the Federal Flood Insurance Act of 1956. The Council, in cooperation with several technical societies, came up in December with a number of recommendations for making the law work and also for coping with floods at state and local levels.



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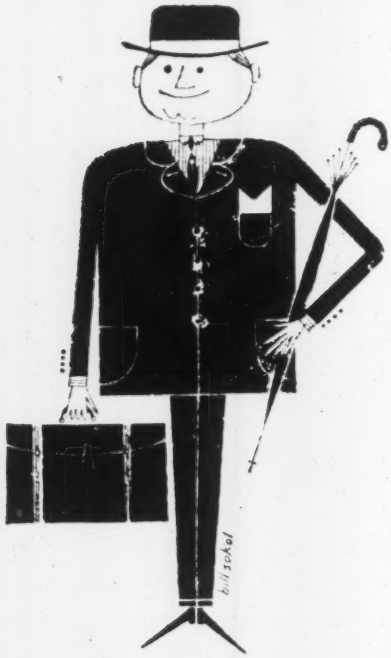

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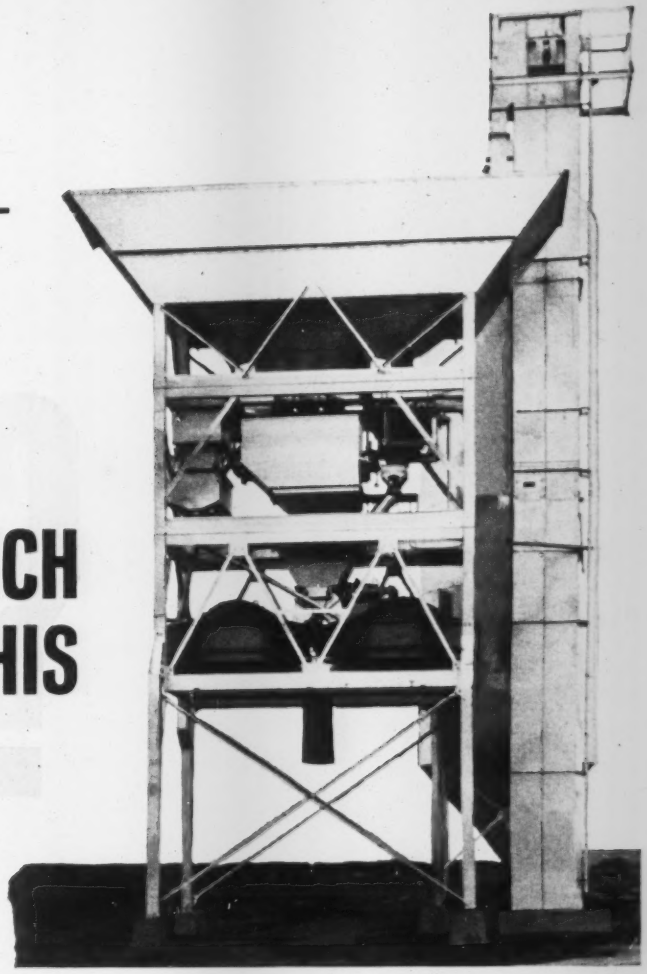

This BUTLER Central Mixing Plant is simply the extremely portable HP-85 Ready Mixed unit with an additional section to accommodate two turbine-type, high speed concrete mixers.

Production? In excess of 200 yards an hour!

The batching cycles are completely automatic; only one man operates batchers and mixers.

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The HP-85 is ideal for fast, efficient, low-cost batching in commercial ready mixed operations as a permanent plant — or as a unit that can be moved quickly and economically from job site to job site. The cost of erecting is only about a thousand dollars.

And of course, the HP-85 brings all its benefits to pre-cast and pre-stressed concrete operations.

Due to the BUTLER HP-85's remarkable portability, a growing number of ready mixed operators are using it to enter the Highway Program — using either agitating or non-agitating trucks.

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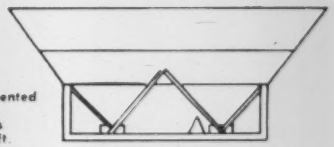
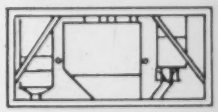
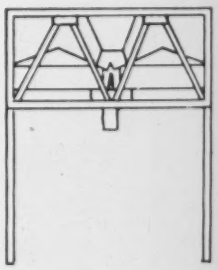


• The compartmented bin section ships complete with lugs attached for crane lift.



• Batcher section is a complete unit with all piping, wiring, batchers and automatic controls in-place, ready for plug-in.



• Mixer section is also a complete unit with two turbine mixers, gates and controls pre-installed. Circuitry is completed with plug-in quick connectors. Support columns ship separately. These are quickly pinned to the mixer platform and swing into place as the mixer section is raised.

Here's the reason the HP-85 is erected at lowest cost . . . in hours instead of days

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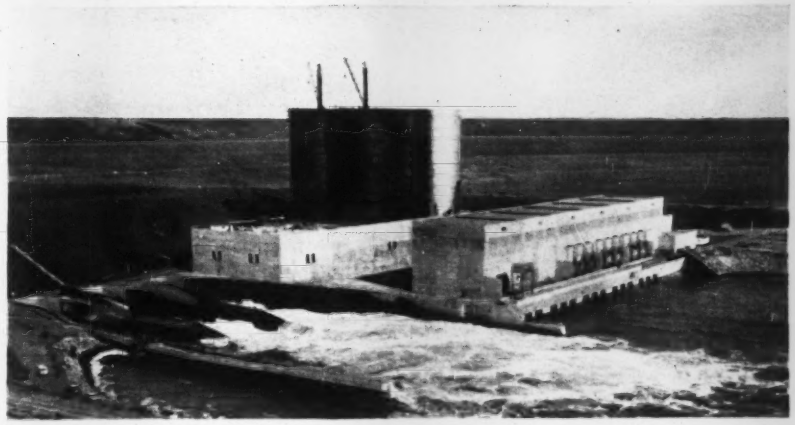
Major Water Supply and Sanitation Projects



GARRISON DAM POWERPLANT on the Missouri River, N. D. Work now moves into the interior where two 80,000 kw generators are being added.

New England

• **Boston** (water)—In January 1959, the Metropolitan District Commission let a $16,883,000 contract for an 8-mile pressure tunnel from Wachusett Reservoir in Clinton to the beginning of the metropolitan pressure system in Marlboro, Mass.

• **Boston** (sewerage)—Two rock tunnels, the North Metropolitan Relief Tunnel and the Boston Main Drainage Tunnel, are now complete as part of the over-all system designed to prevent the pollution of local harbor waters. Both tunnels are 300 ft deep, 11½ ft dia and their flows combined with the capacity of the new Deer Island Plant are designed to care for metropolitan needs until 1985.

Also complete is the $12-million City Tunnel Extension, a seven-mile, 10-ft-dia water tunnel from Chestnut Hill Reservoir to the Medford-Malden Line near Fellsway.

The $100-million metropolitan sewerage system now is almost ready for operation except for the digging of a 90-ft deep, 109-ft-dia caisson for the Deer Island Treatment Plant pumping station. Also under construction are two sewerage tunnels from Chelsea Creek and the Boston Main Drainage Tunnel into this caisson.

• **Providence, R. I.** (sewerage)—Renovation of the Fields Point Sewage Treatment Plant to increase its capacity from 45 to 65 mgd with a peak of 164 mgd was completed in October.

The $3.7-million project to end pollution of Narragansett Bay features one of the first plants to have three treatment methods—activated sludge, step aeration and chlorination.

• **Providence, R. I.** (water)—Construction of a 40 million gal underground reservoir, major improvements of water purification works, and construction of new central operations and control buildings has been scheduled to start in 1959 by the Providence Water Supply Board.

Middle Atlantic

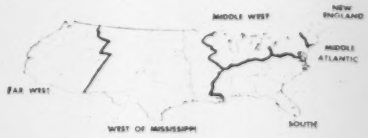
• **Baltimore, Md.** (water)—The City of Baltimore expects to complete in 1959 two water projects started last year in connection with its $45-million Susquehanna River project that will give the city and its metropolitan area a third water-supply source. One job is 30,200 ft of 96-in. pipeline, now about 25% complete. The other is a raw water distribution center about 15% done. Contracts will be let for new work costing about $15 million.

• **Harrisburg, Pa.** (sewerage)—A $5.5-million sewage treatment plant to serve Harrisburg and six neighboring communities is 43% complete. The plant, pumping station and force mains are scheduled for completion in 1960.

• **New York City** (sewerage)—Department of Public Works reports that during 1958 approximately $17 million worth of sewerage construction was completed at 16 locations.

The second stage of the $260-million pollution control program continues with construction on the $10-million Morgan Avenue Interceptor. This is the first major contract for the $109-million Newtown Creek Pollution Control Project. Other parts of the project totaling $11.5 million are under contract.

Expansion of the Coney Island Plant from 70 mgd capacity to 110 mgd will begin early in 1959, as will expansion of the Rockaway Beach plant to double its present 15 mgd capacity.



The regional breakdown.

• **New York** (water)—About 32 miles of the 44-mile West Delaware Tunnel have been completed and 15 miles are lined with concrete. Five contracts totaling $91 million for the construction of this aqueduct have now been awarded.

• **Nassau County, N. Y.** (sewage)—Fifty-five miles of trunk sewers and 715 miles of laterals have been completed at a cost of $72.6 million. Eleven pumping stations have also been built for $1.5 million.

• **Philadelphia** (sewerage)—About $6 million of sewer construction was placed under contract during 1958. First contracts for the $4.5-million Wakeling Interceptor Sewer will be let in 1959.

• **Philadelphia** (water)—The $25-million Torresdale Treatment plant, largest single capital project on the Philadelphia program, is 90% complete. The $12-million reconstruction program on the Queen Lane Treatment Plant is now more than 35% completed. A $9-million reconstruction of the Belmont Filter Plant will start this year.

• **Washington, D. C.** (sewerage)—A $6.5-million sewage treatment plant was completed during 1958. Two others are 95% complete and a fourth 5% complete.

• **Yonkers, N. Y.** (sewerage)—Work continues on the $15-million Westchester County Joint Treatment Plant. Some $6.8 million in contracts have been awarded for the plant.

South

• **Fairfax, Va.** (sewerage)—Fairfax County's $20-million integrated sewerage project, started in 1955, is practically completed. The project consists of sanitary collecting sewers, trunk sewers, pumping stations and three sewage treatment plants.

• **Potomac, Md.** (water)—Bids for the first contract for the Washington Suburban Sanitary Commission's Potomac River Filtration Plant were let in January. Cost of Phase I will be $12.5 million.

• **St. Petersburg, Fla.** (sewerage)—Started in 1955, a $27-million project to sewer the unsewered portions of the city is 61% complete. An estimated

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. . . Water Projects

$17 million to $18 million worth will be finished by the end of 1959.

• **Tampa, Fla.** (sewerage)—A $10-million project to build sewers in newly annexed areas, started in 1955, is now virtually complete. Some 200 miles of sanitary lines and 25 miles of trunk lines are installed.

• **Louisville, Ky.** (sewerage)—The City Metropolitan Sewer District's $5-million sewage treatment plant is completed and operating at about 30% of capacity, awaiting completion of a $10.3-million interceptor sewer system.

Middle West

• **Chicago** (water)—The Department of Public Works expects to award $26 million worth of contracts this year for additional construction at its $100-million, 960-mgd Central District Filtration Plant, now over a third completed. It will also start construction on a $6-million, 50% addition to its 320-mgd South District Filtration Plant.

Construction will be started this year on the $5-million Columbus Avenue water tunnel. The 25,000-ft-long, 16-ft-dia 79th Street water tunnel is 88% completed. And the six miles of large tunnels in the North Side System connecting to the Central District Filtration Plant are virtually completed.

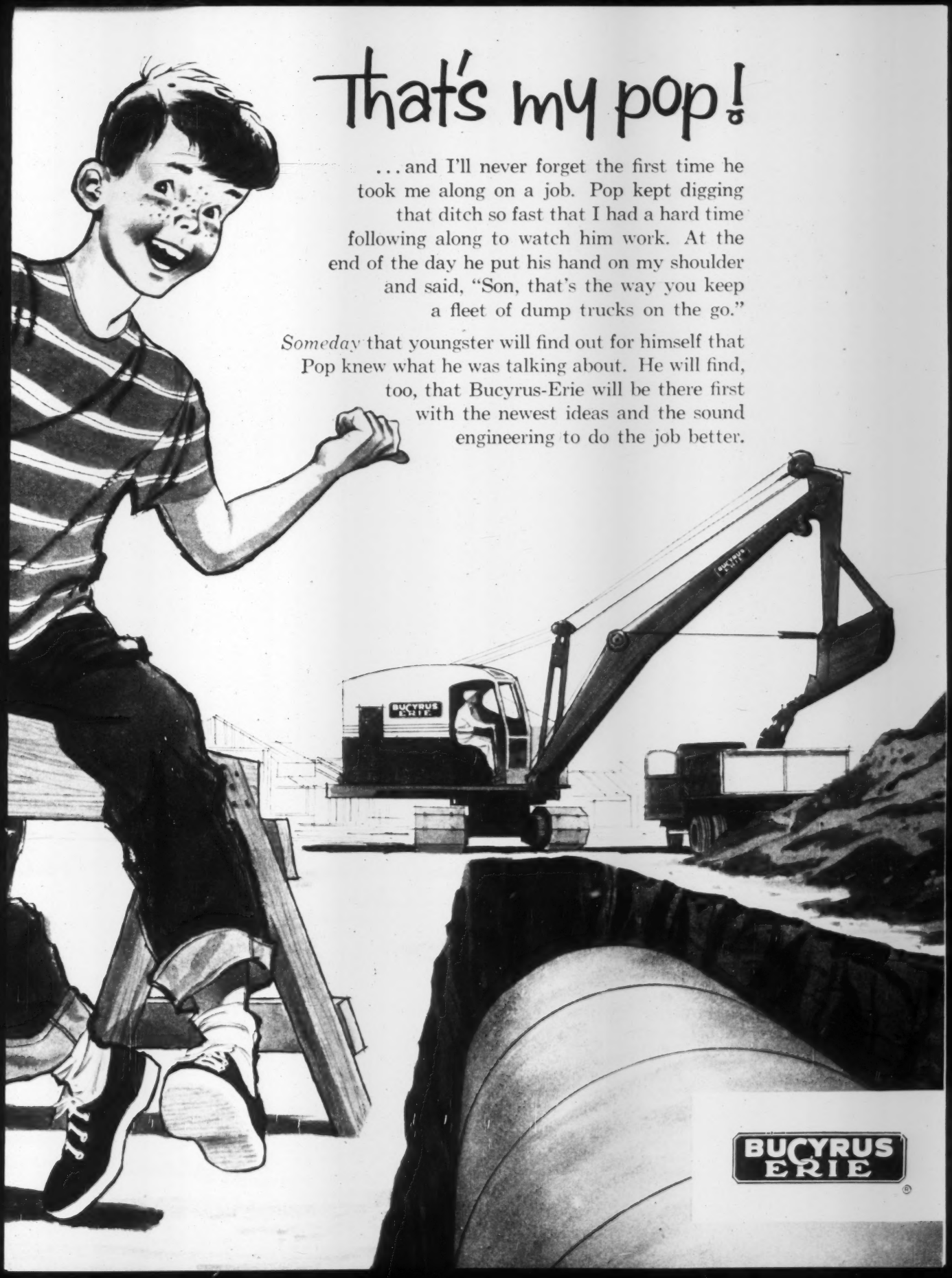
• **Chicago** (sewerage)—This year the Metropolitan Sanitary District of Greater Chicago will award contracts for nearly $10 million for sewers and about $18 million for sewage treatment works. Last year the District awarded contracts for $8 million for sewers and $3 million for sewage treatment works.

• **Milwaukee, Wis.** (sewerage)—The Milwaukee City and Metropolitan Sewerage commission have authorized during January 1958 the design of $35 million to $40 million worth of new sewerage facilities, including a treatment plant and 30 miles of interceptors. The new facilities represent the first phase in a $51-million construction program aimed at providing the Milwaukee area with adequate sewerage facilities through the year 2000.

• **Toledo, Ohio** (sewerage)—The city's $10-million secondary treatment plant is completed but opening has been delayed by an explosion that destroyed two pumping stations.

• **Cleveland** (water)—The $22-million, 50-mgd Clague Road Water Plant project was opened in September.

• **Detroit** (sewerage)—The West McNichols relief sewer, $6.8 million, was


That's my pop!
...and I'll never forget the first time he took me along on a job. Pop kept digging that ditch so fast that I had a hard time following along to watch him work. At the end of the day he put his hand on my shoulder and said, "Son, that's the way you keep a fleet of dump trucks on the go."
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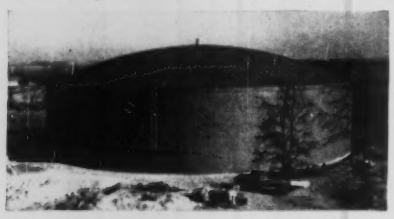

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completed in October. Woodmere Pumping Station and relief sewer, $3.4 million, is over the half way mark. An Algonquin Ave. outlet relief sewer, $3.8 million, was started in early November. East Seven Mile relief sewer project, $2.1 million, is approximately 33% along. Livernois extension sewer, $3.6 million, is 60% completed.

The $174-million storm relief system program, which includes all these projects, should be completed in 1975. The Detroit Department of Public Works is presently operating on a $30-million budget that extends from January 1958 to January 1961.

• **Wayne County, Mich.** (water)—Tunnels, a 150-mgd treatment plant, mains, and an intake in the lower Detroit River—totaling $11 million—are about 50% finished.

West of the Mississippi

• **Fort Worth, Tex.** (water)—June completion is scheduled for the $4-million South Holly Treatment Plant. Work proceeded on about $3 million in water mains.

• **Dallas, Tex.** (water)—First construction contracts have been let on the $20-million Iron Bridge Dam and Reservoir. The reservoir will hold 930,000 acre-ft of water.

• **Denver** (water)—$19 million was spent during 1958 on a 15-year capital improvement program. The largest is the Harold D. Roberts tunnel extending 23.3 miles under the Continental Divide. Footage driven during the year was 8.62 miles, bringing the total driven through December to 15 miles.

The $22.6-million capital improvement budget for 1959 includes a start on the first stage of the Dillon Dam and channel improvements to the North Fork of the South Platte River.

Far West

• **Seattle** (water)—First two contracts were awarded on the $23.6-million Tolt River water supply development. Scheduled for award in 1959 are contracts totaling $23.2 million for an earthfill dam, clearing the reservoir basin, a pipeline and a receiving reservoir.

• **Seattle** (sewerage)—Work was substantially completed on a $4.5-million West Seattle program, first portion of an $18-million program which will extend over the next six years.

• **Portland** (water)—Work was about one-third complete on related construction for a second major storage dam in Portland's Bull Run reserve. Contract for the dam itself and 450-ft-wide spillway is expected to be let within the next year. The new dam is part of a 10-year, $45-million expansion of water system facilities.

• **East Bay Municipal Utility District** (water)—For this Northern California water utility, work was under way during 1958 on projects totaling $4.5 million. Construction will get under way this year on first $22-million phase of the $68-million Mokelumne Aqueduct No. 3, an 87-in.-dia line from the Sierra Nevada to the East San Francisco Bay area.

• **San Francisco** (water)—In the Sierra Nevada storage area for San Francisco's water supply, construction started on the $5.2-million Cherry powerhouse. Construction of two tunnels totaling $8 million was 80% along. Some $22 million worth of contracts have now been let on the $54-million Cherry-Canyon power project.

In San Francisco, the final section of the $7.6-million, 22-mile Sunset supply line was completed, boosting deliveries into the city to 85 mgd. And the $3-million job of lining and roofing the 86-mg south basin of Sunset Reservoir was approximately half finished by the end of the year.

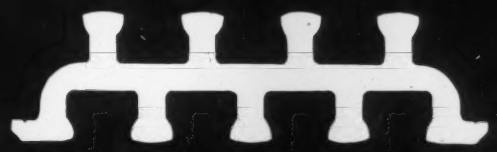
• **Los Angeles** (sewerage)—The five-year, $60-million expansion of Los Angeles' Hyperion sewerage system, begun in 1955, has moved into the final stages with completion of the 10-mile North Central Outfall in September. Cost of this 10-ft-dia trunk was $13 million.

• **Southern California** (water)—The Metropolitan Water District of Southern California spent $47 million on construction in 1958 and plans to spend $45 million in 1959. Much of the funds are being spent on bringing the Colorado River Aqueduct up to full capacity by the end of 1959.

On the district's distribution system, 33 miles of 48- and 72-in. pipelines under five contracts were finished in 1958. And 14 miles of 96-in. line is scheduled for completion in March. A $9-million enlargement of Lake Mathews, the Aqueduct's terminal reservoir, from 107,000 to 182,000 acre ft, will be undertaken in 1959.

• **Territory of Hawaii** (water)—Tunnelers had progressed 8,900 ft by 1958's end on a 27,000-ft tunnel that is the prime contract in an $8.2-million program to develop irrigation waters for farming an arid section of Molokai Island in the Territory of Hawaii.

(*Water projects continued p. 114*)



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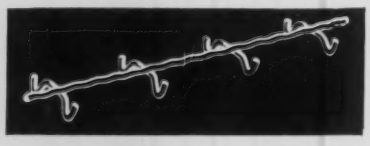

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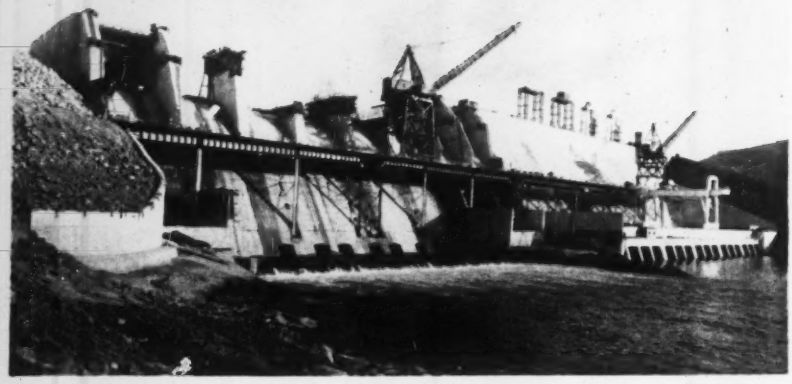
Major River Use and Control Projects



NOXON RAPIDS DAM in western Montana is now 76% complete. Installed capacity of the powerhouse will total 400,000 kw.

1. Columbia and North Pacific Basins

• **Columbia River**—Work has started on the first stage cofferdam for the $384-million **John Day Dam**, which will complete slackwater navigation from the Pacific Ocean to above Pasco.

The Dalles Dam—Four 78,000-kw generators energized in 1958 brought the $260-million project to 91% completion with six of its scheduled 14 main generators on the line.

Priest Rapids Dam—Construction for the Grant County Public Utility District was 65% complete at the end of 1958, well ahead of schedule. About $36 million was spent in 1958 and estimates for 1959 are $36.5 million. All of its 10 units are expected to be producing power by mid-1960.

Rocky Reach Dam—Work on a $52.4 million contract for the final stage of Rocky Reach Dam on the Columbia River for the Chelan County PUD was one-third completed by the end of 1958. The $245-million project, with a rated capacity of 775,000 kw, is scheduled for completion in 1962.

• **Snake River**—Idaho Power's **Brownlee Dam** in the Hell's Canyon area of the Snake River was completed in January, 1959, with the fourth 90,000-kw generator of initial installation in production.

Oxbow Dam—The second of Idaho Power's planned three-dam system just downstream from Brownlee is "well advanced" and scheduled for completion in 1960. Oxbow's clay core was completed in 1958.

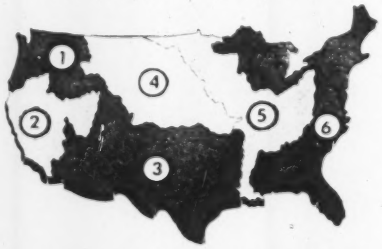
Ice Harbor Dam—With work under way on the powerhouse structure, this $135-million Corp of Engineers project is 35% complete. The 7½ south shore spillway bays were virtually completed. Work continued on fish passage facilities and railroad relocations. Contracting the $10-million job of constructing a 103-ft lift navigation lock, right abutment, 2½ spillway bays and a north shore fishway is scheduled for April.

• **Clark Fork River**—Washington Water Power Co.'s **Noxon Rapids Dam** in western Montana was 76% complete in December. All major construction contracts have been let. The company's 1959 construction budget includes $12 million for the Noxon project plus $1.8 million for transmission facilities.

• **Upper Baker River**—Puget Sound Power & Light Co.'s new hydroelectric dam on the Upper Baker River near Concrete, Wash., was brought to 80% completion during 1958.

• **Green River**—Work was substantially completed in 1958 on the railway relocation necessary for the $36.7-million **Howard Hanson Dam**, a flood control project in Eagle Gorge on the Green River southeast of Seattle. At year's end, an $8.8-million contract had just been awarded for the dam, a rockfill structure with sand and gravel core, and preliminary work was beginning. It is scheduled for completion in late 1962.

(*River use continued p. 146*)



Projects are grouped by major drainage areas, as shown on map.

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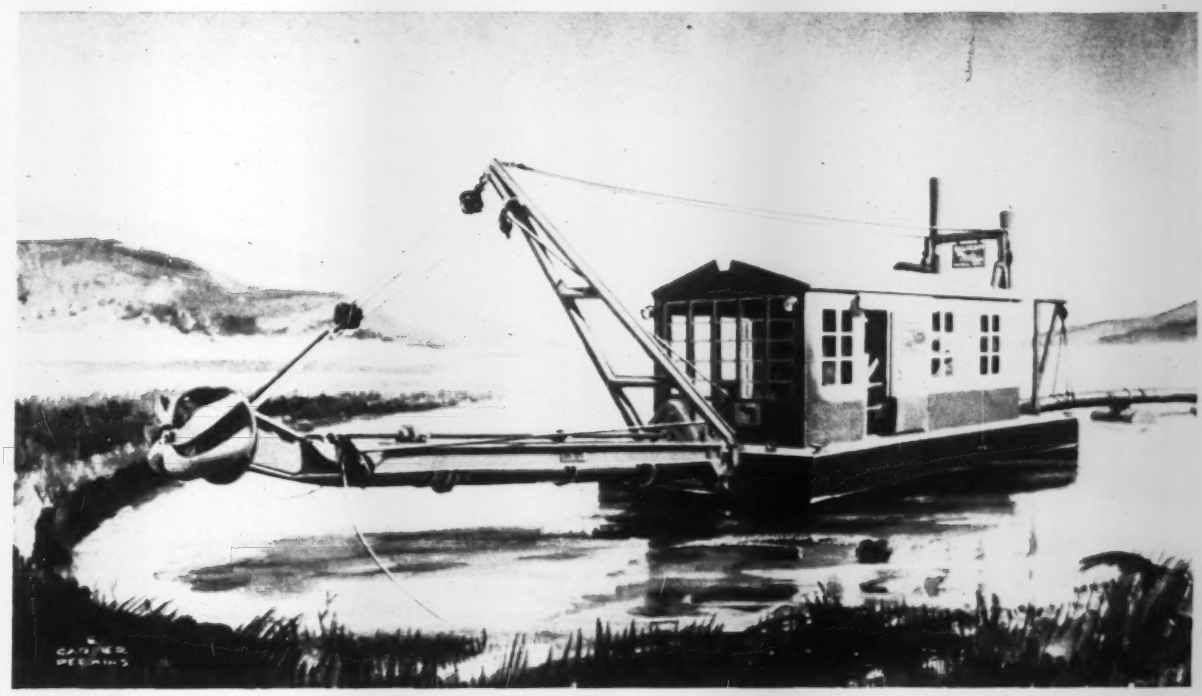

easy to move from job to job . . . by truck or rail . . . match-marked parts for rapid field assembly

The new Ellicott 8" Dragon Model Dredge is a compact, high performance dredging unit. Like all "DRAGONS," this unit can be used for a variety of jobs . . . puts the outstanding economy of hydraulic dredging at your disposal for projects like road building, plant pond clearance and mosquito control. Or, for profitable development of new real estate from low-cost marginal land.

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- **Steel Spuds** "walk" the dredge through canals or waterways as work advances.

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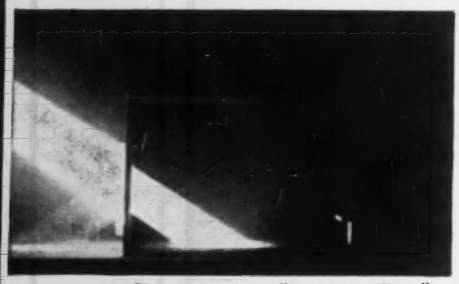

Photograph shows "Smoke Box Room" with its window glazed with clear glass.

Smoke Box photo showing window glazed with a diffusing glass.

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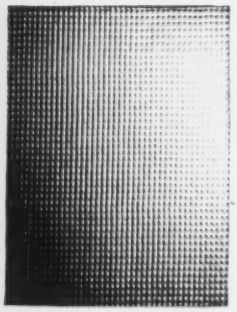

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. . . River Use and Control

• **Clackamas River**—Portland General Electric Co.'s **North Fork Dam** was completed except for finishing the $3.1-million fish-passage facilities. The $20-million thin-arch dam, 207 ft high, was the major part of a $25-million expansion of PG&E's Clackamas River facilities.

• **Willamette River Basin**—The Corps of Engineers' $40-million **Hills Creek Dam** on the Middle Fork Willamette River was 41% completed. Contract for construction of the 335-ft-high earth-and-gravelfill dam and outlet works is about 32% complete. Completion is scheduled for 1961.

2. Central Valley and South Pacific Basins

• **Trinity River Project—Trinity Dam**, largest dam project under way in California, advanced to about 42% completion. The dam will be an earth and rockfill structure 537½ ft high, highest earthfill in the world.

Work advanced to 38% completion on the $36.6-million **Clear Creek Tunnel**, excavation of the 10.8-mile-long 17.5-ft-dia tunnel is 58% completed.

Plans are being completed for other units of the $262-million Trinity Project, including **Whiskeytown Dam, Lewiston Diversion Dam** and **Spring Creek Tunnel.**

• **Central Valley Project**—The **Corning Canal** unit of the **Sacramento Valley Canals system** is about 55% complete.

A major factor in lack of progress on the $55-million Sacramento Valley Canals is a stalemate over signing of repayment contracts with water users.

• **American River**—Sacramento Municipal Utility District got work under way in 1958 on two units of its extensive Upper American River hydroelectric system. Plans call for 10 dams and reservoirs with a total storage capacity of 287,600 acre-ft, connected by natural stream beds and 23 miles of tunnels; and four power plants with a total installed capacity of 206,000 kw.

Last summer SMUD started work on **Ice House Dam**, a 175-ft-high earthfill structure, on the South Fork of Silver Creek and the 4-mile-long **Jaybird Tunnel**. Detailed plans are being completed for a start within the next year on **Union Valley Dam**, the biggest reservoir in the system. Total project costs are expected to exceed $100 million.

• **Feather River**—Pacific Gas & Electric Co. completed in 1958 its $38-million Poe project on North Fork of the Feather River. Two other Feather River projects were completed during

ONE MAN OPERATES THIS ERIE PLANT HANDLES BILLING AND MANAGEMENT, TOO

Mr. F. Browne Gregg, president of the Atlas Concrete Company, Ocala, Florida, says this about their new Erie Concrete Plant:

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"Automatic batching," continues Mr. Gregg, "also eliminates the chances for human error, lets us draw a finer line on our mix. This gives us complete quality control and increases customer satisfaction."

When all's said and done, operators decide on Erie Equipment because it cuts costs, speeds production and controls quality.

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This specially designed electronic panel gives the operator positive control of the entire batching cycle.

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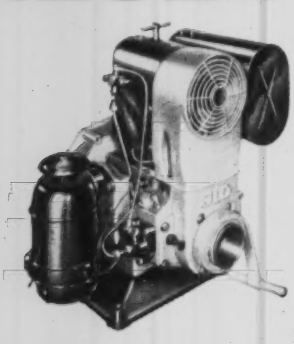
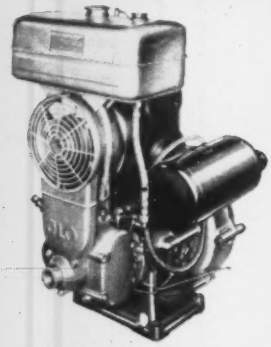


Jlo Series 365
7 Horsepower



Jlo Series 660
12 Horsepower

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ECONOMY: low initial cost is combined with maintenance economy and reduced overhaul cost, when required.

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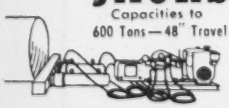

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. . . River Use and Control

the year—**Caribou No. 2** powerhouse (109,000 kw) and **Butt Valley** powerhouse (36,000 kw), costing $41.7 million.

• **Kings River**—Pacific Gas & Electric Co. made major additions during the year to its $77-million Kings River hydroelectric project in Central California. Completed during the year: **Courtright Dam**, with reservoir capacity of 123,500 acre-ft; **Wishon Dam**, which creates a 128,000-acre-ft reservoir; **Hass** powerhouse with a capacity of 128,000 kw, and the 91,500-kw expansion of Balch powerhouse.

• **San Joaquin River**—Southern California Edison's $49.6-million, 126,000-kw **Mammoth Pool** project on the San Joaquin River is scheduled for completion by spring runoff in 1960.

3. Colorado, Gulf, Arkansas, White and Red Basins

• **Upper Colorado River Project**—At **Glen Canyon Dam** on the Colorado River in Utah, both diversion tunnels are holed through and concrete lining is nearing completion. Initial cofferdam work has started.

The spectacular 1,028-ft steel arch highway bridge is nearly complete following closure of the arch last August.

Navajo Dam—Following award of a $22.8-million main construction contract in mid-1958, work on this 26-million-cu-yd earthfill on the San Juan River near Framington, N. M., is now 10% complete.

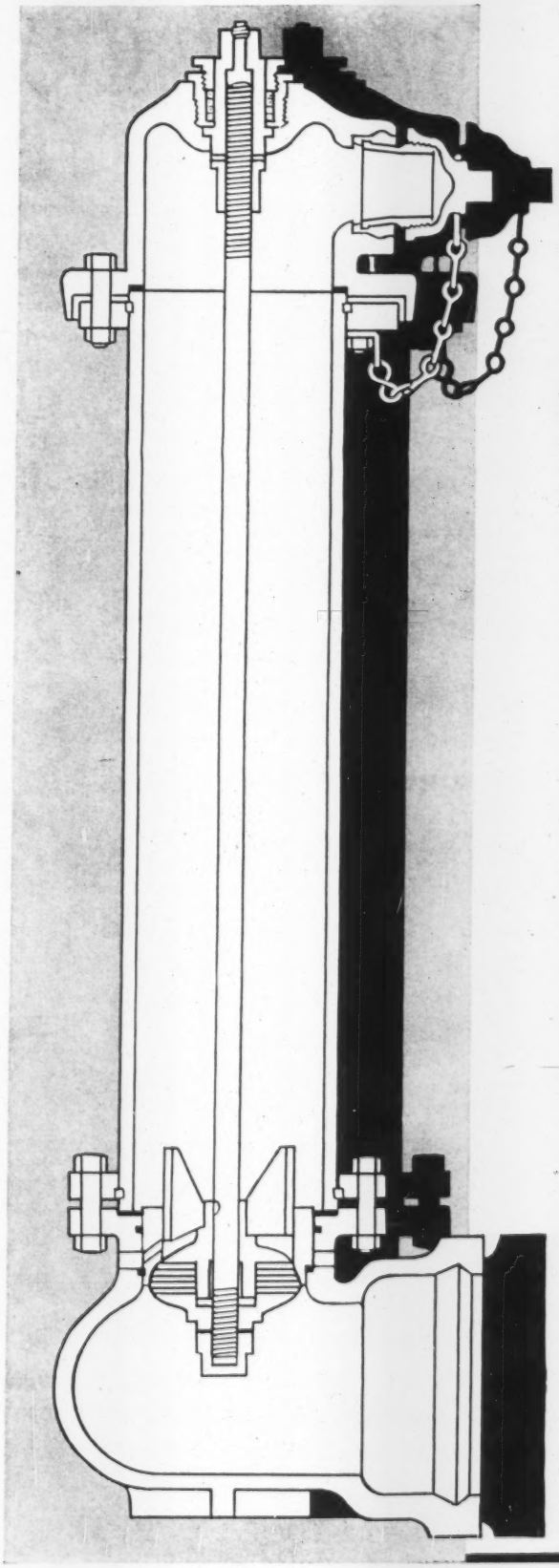
Flaming Gorge Dam—Progress is slow on this 490-ft-high arch dam on the Green River in Utah following award of a $29.6-million contract in mid-1958.

• **Arkansas River Basin**—The $137-million **Keystone Reservoir** on the Arkansas River above Tulsa is 9% complete and scheduled for completion in 1965. The 4,750-ft-long, 120-ft-high rolled fill embankment will provide a total storage of 1.9 million acre-ft for flood control, navigation and water supply.

Major construction will be started this year on the $94-million **Dardanelle Lock and Dam** on the Arkansas River in Arkansas.

• **White River Basin**—Initial construction is expected to be started this year on the $50-million **Beaver Reservoir** on the White River in northern Arkansas. Completion will take 5 to 6 years. The 2,480-ft-long, 220-ft-high embankment will store 1.6 million acre-ft.

Major construction will also start this year on the $56-million **Greers Ferry Reservoir**, now about 6% complete. Completion is scheduled for



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- Valve opens against water pressure—water pressure holds it closed in case of accident
- Every point of friction is protected by at least one bronze surface
- Head revolves 360°; simply loosen bolts and rotate
- Optional break-point flange with frangible coupling in hydrant stem makes it unnecessary to excavate in case of a broken hydrant
- Available for bell, flange and mechanical pipe connections; with conventional or "O" ring packings

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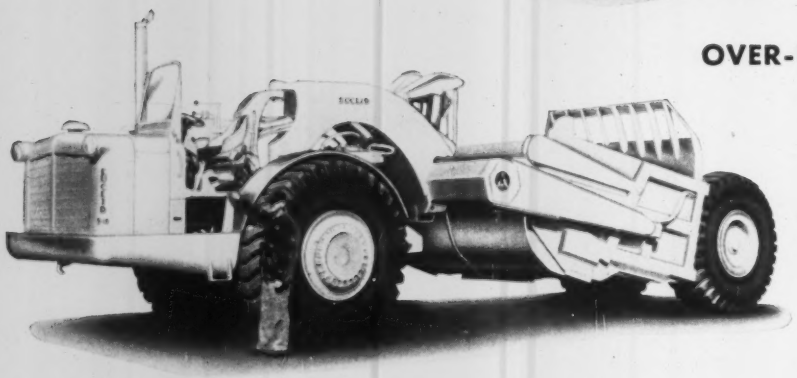
Euclid offers you the most complete line of self-powered scrapers in the industry—and they're all job-proved to give you more work-ability and low cost yardage. No matter what your job may be—from small clean-up or grading work to big yardage projects—there's a size and type that meets your requirements.

SIX-WHEEL SCRAPERS

These models provide maximum stability for long, high speed hauls. They have capacities of 12, 18, and 24 yds. struck . . . are powered by engines of 218 to 335 h.p. and haul heaped loads of 16, 25 and 32 yds. at speeds up to 30 mph. These scraper bowls are interchangeable with bottom-dumps of 13, 17 and 25 yd. capacities.

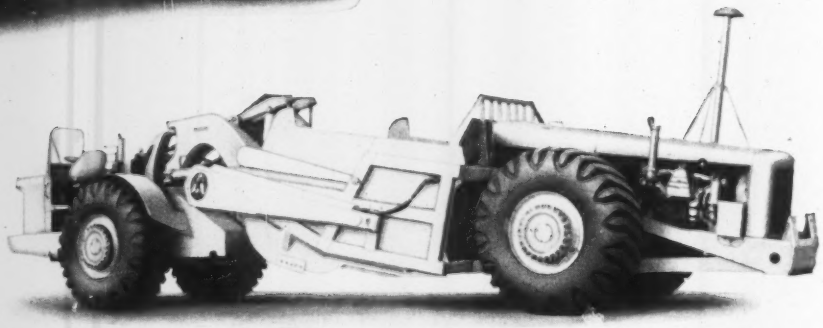


OVER-HUNG ENGINE MODELS

Payload capacities of these "Eucs" are 7, 12 and 21 yds. struck . . . 9, 17 and 30 yds. heaped. Over-hung engine design of tractors provides excellent maneuverability and ease of handling in difficult work . . . engines are 143, 218 and 325 h.p. Rear-Dump trailers of 12, 22 and 35 ton capacities are interchangeable with the scrapers.

TWIN-POWER SCRAPER

With a total of 518 h.p., this Euclid has a struck capacity of 24 yds. . . . 32 yds. heaped. Two engines, each having a separate Torqmatic Drive, enable this "Euc" to work independent of other equipment and move more yards at lowest cost on any scraper job.



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FOR MOVING EARTH, ROCK, COAL AND ORE

size or kind of job

7 MODELS

job proved for high production

TS-24

The Model TS-24 has a 300 h.p. engine for the tractor and a 218 h.p. engine for the scraper... each with a separate Torqmatic Drive. Heaped capacity at 1:1 is 32 cu. yds.... 24 yds. struck. Full 90° hydraulic steering ... 27.00 x 33 tires with 33.5 x 33 optional.

SS-12

This 4-wheel tractor model has a struck capacity of 12 cu. yds.... 17 yds. heaped ... with 218 h.p. engine and 5-speed transmission. Tire sizes are 12.00 x 25 front and 21.00 x 25 on drive and scraper wheels with 24.00 x 25 optional.

S-7

Model S-7 is equipped with 143 h.p. engine ... 18.00 x 25 tires ... 4-speed Torqmatic Drive ... full hydraulic 90° steering. Capacity is 7 cu. yds. struck and 9 yds. heaped at 1:1 slope. Optional tires are 21.00 x 25.

SS-18

The Model SS-18 has a 300 or 320 h.p. engine and 3-speed Torqmatic Drive or a standard 10-speed transmission. Capacity is 18 cu. yds. struck and 25 yds. heaped. Drive and scraper tires are 24.00 x 25 with 29.5 x 25 optional... hydraulic booster steering.

S-12

Powered by a 218 h.p. engine, the Euclid S-12 Scraper has a 5-speed transmission ... 24.00 x 25 tires ... full hydraulic 90° steering. Struck capacity is 12 cu.yds.... at 1:1 heap, 17 yds.

SS-24

A 325 or 335 h.p. engine with Allison 4-speed transmission and converter lock-up powers the Model SS-24. Struck capacity is 24 cu. yds.... 32 yds. heaped. Drive and scraper tires are 27.00 x 33 with 33.5 x 33 optional for maximum traction and flotation.

S-18

This Model S-18 has a 325 h.p. engine with 4-speed Torqmatic Drive and converter lock-up. Struck capacity is 21 cu. yds.... 30 yds. at 1:1 heap. Tires are 27.00 x 33 with 33.5 x 33 optional ... full hydraulic 90° steering.

"Euc" Scrapers have hydraulic lever action, 4 section adjustable and reversible cutting edges, unequalled accessibility for servicing and other cost-cutting advantages. Check job performance and return on investment before you decide on any scraper equipment.

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used wherever good design requires a top-quality joint filler in concrete construction

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ASPHALT EXPANSION JOINTS
SEALTIGHT Premoulded Asphalt Expansion Joints have been in general use for more than 30 years. They provide initial low cost and durability. Entirely waterproof and rigid, they are highly recommended for most every joint installation. Furnished in cut sizes or slabs. Meets A.A.S.H.O. Spec. M-33-49 (also 42 and 48), A.S.T.M. Spec. D-994-53-T, U. S. Navy Dept. 4-Y-D and 13-Y-C, and all State and Federal Specifications.

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- TONGUE and GROOVE Center Strip.
- Hot and Cold Rubber Asphalt Joint Seal.
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- Air Entraining Agents.
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- "PREMOULDED MEMBRANE" Vapor Seal.
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- "HYDROMAT" Asphalt Liners.

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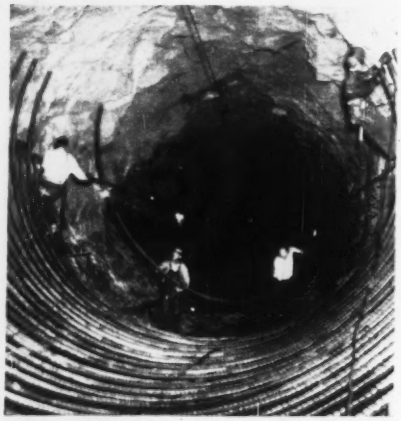


DEFORMED REINFORCING is erected in 17½ ft dia Clear Creek Tunnel in California.

1964. Total storage will be 2.8-million acre-ft. The $66-million **Table Rock Reservoir** in Missouri and Arkansas is 85% complete. The 6,420-ft-long, 250-ft-high dam, which will store 3.5 million acre-ft of water, was completed last August.

• **Texas Coast river basins**—The $58-million **McGee Bend Reservoir** on the Angelina River in the Neches River Basin is 10% complete. It will store four million acre-ft for flood control, water conservation, and power development. Closure is planned for 1964.

The $17-million flood control and water conservation **Canyon Reservoir** in the Guadalupe River Basin is 9% complete. Completion date is June 1966. Total storage is 740,000 acre-ft. **Waco Reservoir**, on the Bosque River in the Brazos River Basin, is only 2% complete. Completion date is June 1957.

Two flood-control projects—the $25-million **San Antonio Channel Improvement** and the $38-million **Brays Bayou Channel Rectification** to protect Houston—are 7% and 35% completed, respectively.

• **Rio Grande Basin**—The $18-million **Abiquiu Reservoir** on the Rio Chama in New Mexico is 30% complete. The earthfill dam is 1,540-ft long and 325 ft high, and will store 1.2 million acre-ft. A $4.5-million tunnel and outlet works contract was completed last December. A contract for the main dam was awarded early this year. Completion is scheduled for 1962.

4. Missouri Basin

• **Missouri River Basin** — Under the Corps' **Agricultural Levee** program along the lower Missouri, 250 miles of levees have been completed, protecting 247,000 acres of bottom land. This project is about 20% completed.

(*River use continued on p. 154*)

PLYMOUTH DIESEL

MINE-O-MOTIVE

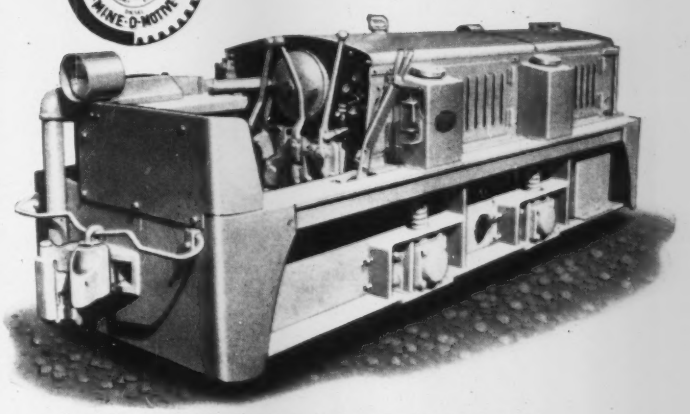
Mine Locomotives 3 to 12 Tons

Engineered expressly for

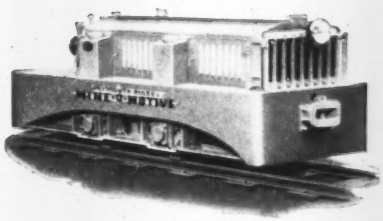
YOUR LOCOMOTIVE HAULAGE

in Today's modern mining operations

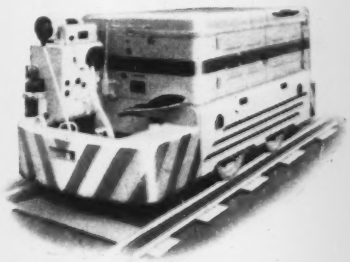
You will find these rugged locomotives performing the toughest hauling jobs in mines and tunnels everywhere. Stamina, stability—ECONOMY in performance, SAFETY in operation—and extra years of trouble-free operation—are ENGINEERED in the design and construction of the Mine-O-Motive series. Controls are convenient, simple, safe. Visibility is excellent. And the Diesel-powered models shown have the famous Torqomotive* Drive for easy starting and smooth operation. They supplement Plymouth gasoline, Diesel and Diesel-electric models which have served all industry since 1914—and with lowest ton-mile costs in the field.



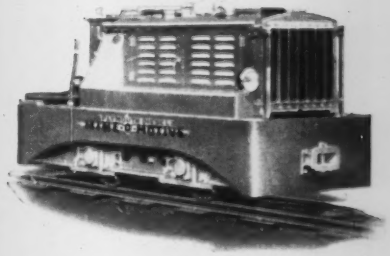
U. S. Bureau of Mines approved exhaust conditioning equipment.



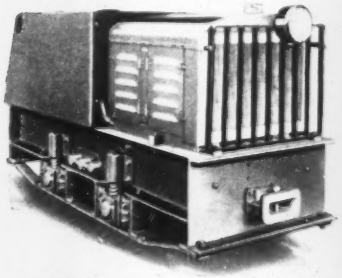
MINE-O-MOTIVE SERIES Model FMD-00 5 or 6 Tons, Torqomotive* Drive—short wheel base, low center of gravity.



MINE-O-MOTIVE SERIES Model FMD-22 5, 6, 7, 8 or 10 Tons, Torqomotive* Drive (this model approved under Permissible Schedule #22, U. S. Bureau of Mines, for operation in gaseous mines).



MINE-O-MOTIVE SERIES Model DMD-00, 8 to 12 Tons, with Torqomotive* Drive — low, compact, one-piece welded frame.



SERIES T, mechanical drive, 3, 3½ or 4 Tons. Torqomotive* Drive in 3½ or 4 Tons.

*TORQOMOTIVE DRIVE: Plymouth Transmission coupled to Hydraulic Torque-Converter.

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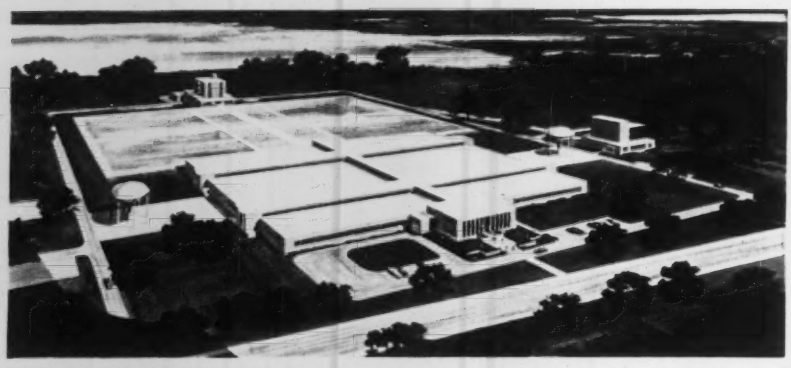
PLYMOUTH LOCOMOTIVE WORKS

Division of the Fate-Root-Heath Company,
Dept. A-4, Plymouth, Ohio



TORRESDALE WORKS—Philadelphia's 282-mgd filter plant now nears completion.

On the Corps' authorized 9-ft. **Bank Stabilization and Navigation** project on the Missouri from Sioux City, Iowa, to the mouth, 26 new construction contracts were awarded last year, advancing the $349-million project to about 75% of completion.

Two dams completed and in operation are the $49-million **Gavins Point Dam** and the $193-million **Fort Randall Dam** with its 320,000 kw power plant in production.

Three of the 80,000 kw generators at the $294-million **Garrison Dam** are "on the line" and the other two are under construction. They are expected to be in operation in 1961.

The $86-million **Tuttle Creek Dam** on the Big Blue River near Manhattan, Kan. is 35% completed. Basically a flood control structure, the dam is scheduled to be closed this July, and the project completed in 1962.

Over-all progress of the Corps of Engineers' program in the Missouri River basin measured in dollar outlay at the close of 13 years of construction totals: Projects constructed or essentially completed, $464 million; under construction or scheduled to start early this year, $1.5 billion; in the planning stage, $234 million.

• **Reclamation Region 6**—Anchor Dam, another Missouri River Basin project on the South Fork of Owl Creek in Wyoming, is 50% finished. The 550-ft-long, 200-ft-high arch dam will store 17,400 acre-ft of water.

Construction is expected to be started late this year on the $20-million **East Bench Unit** of the **Three Forks Division** on Beaverhead River in Montana. Designed to provide irrigation water for 21,800 acres of new land and supplemental water for 28,000 acres of irrigated land, its principal features include **Clark Canyon Dam**, the **Barratts Diversion Dam** and the **East Bench Canal.**

Considerable construction activity was centered last year on the multimillion-dollar **Helena Valley Unit** in Montana. Completed last year were the 2.8-mile, 7-ft-dia horseshoe tunnel, two 84-in. siphons, 31 miles of canals and six miles of open drains. Already completed is the **Helena Valley Dam**, a rolled earthfill 2,600 ft long and 73 ft high. The project's million-dollar pumping plant will be finished this spring.

• **Reclamation Region 7**—During 1958 the Bureau's construction expenditures totaled $24 million. This year the figure is expected to be increased to about $27 million. Construction milestones last year included completion of **Lovewell Dam** in Kansas and first stage construction of the **Sargent Unit** in Nebraska.

Several multipurpose irrigation, power development and flood control projects were advanced to over 50% completed last year. One of the largest is the $51-million **Bostwick Division** straddling the Nebraska-Kansas line. The project is 74% finished.

Another major irrigation and flood control project, the **Frenchman-Cambridge Division** in southwest Nebraska includes four dams. Three are completed. Water from the four reservoirs, with capacity totaling 507,400 acre-ft, will be delivered to 64,300 acres by 215 miles of canals. There are also four diversion dams in the project. The $81-million project, now about 75% finished, will be completed by the middle of 1963.

Glendo Dam and power plant project, now about 90% completed, will be finished by the middle of 1960 at a project cost of $45 million. Its 798,000 acre-ft of storage will furnish flood control, hydropower and irrigation for 37,600 acres of land in Wyoming and Nebraska. Construction of the 48,000-kw **Fremont Canyon** power plant in this project is under way. Remaining contracts will be awarded in 1959.

• **Colorado-Big Thompson** — Completion of the $159 million **Colorado-Big Thompson** project in north central Colorado is set for June of this year. Work remaining to be done includes a 4,500-kw power plant and switchyard. Completed power plants have a total installed capacity of 179,450 kw. The project also provides supplemental water for the irrigation of 720,000 acres.

5. Mississippi and Ohio Basins

• **Calumet-Sag Navigation Project**—Major feature of this $104-million Chicago project is the widening of 16 miles of channel from 60 ft to 225 ft. The first 10 miles of widening is nearing completion. An additional three miles will be placed under contract by the Corps of Engineers this year. Other features of the Calumet-Sag project include the new 1,000 x 110-ft **Thomas J. O'Brien Lock and Dam**, placed under contract last year. The project also includes the reconstruction of 12 railroad and 11 highway bridges to meet clearance requirements for the widened channel. Four bridge-reconstruction contracts are expected this year.

• **Great Lakes Connecting Channels**—This $141-million program, involving the deepening of 130 miles of channels connecting the Great Lakes to accommodate the modern Great Lakes and St. Lawrence Seaway fleet, is about 25% finished. Eight underwater dredging contracts totaling $48 million are under way, and about $8 million worth of additional dredging will be placed under contract this year. Completion of the program, which calls for the removal of 44 million cu yd of earth and rock, is scheduled for 1964.

Now in the planning stage by the Engineers is a new Poe Lock at the Soo, estimated to cost $40 million.

• **Ohio River Basin**—Construction on the $182-million Corps of Engineers' **Barkley Dam** on the Cumberland River was begun in May 1957 for lock cofferdam, excavation and left bank earth dam. This contract is 91% complete. A contract was awarded in December, 1958, for construction of the lock. The entire project is about 5% complete.

An interesting feature of the project is the canal connecting the Cumberland and Tennessee rivers to permit utilization of the flow of both rivers. River traffic between the Cumberland and points downstream from the Tennessee River will save about 20 miles by going through Kentucky Lake.

The $30.2-million **Cheatham Lock and Dam** on the Cumberland, 23 miles upstream from Nashville is approximately 99% complete. It's costing $48 million.

(*River use continued p.* 156)

A sign of efficiency

for every type of building

Wherever you see Kinnear Rolling Doors, you can be sure there's a high level of efficiency in handling plant traffic—plus other important advantages.

The coiling upward action of the *Kinnear-originated* interlocking steel-slat door curtain makes all space around the door fully usable all the time.

Kinnear Motor Operators add quick, easy, push-button control to this efficiency. They permit you to control any number of doors from a single point, or each door from any number of points.

This cuts traffic delays and bottlenecks and promotes *prompt* door closure, reducing loss of heated air in winter, cooled air in summer.

In addition, Kinnear Rolling Doors assure extra all-steel protection against wind, weather, fire, intrusion and vandalism.

You can't beat Kinnear's 60-year record for providing long, low-cost, dependable door service under hardest daily use. Kinnear Rolling Doors—built to fit any opening—are easily installed in old or new buildings. Write today for catalog or recommendations.

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Heavily Galvanized! 1.25 oz. of pure zinc per sq. ft. of metal (ASTM Standards) gives Kinnear Rolling Doors **lasting** protection from the elements. Special Kinnear Paint Bond permits paint to be applied immediately after doors are erected, assuring thorough coverage and lasting adhesion.

Schramm 125 cfm Heavy Pneumatractor is an air compressor with tractor features, including front end loader and backhoe. Pictured here is one-yard loader being used for rough grading. With Pneumatractor, you get a unit that replaces many special machines. Available: gasoline or diesel.

HERE'S AN AIR COMPRESSOR THAT'S DIFFERENT!

Schramm Heavy Pneumatractor is a 125 cfm compressor—with heavy-tractor features—does all kinds of construction work.

Look closely at competitive air compressors today. You'll find designs are similar, engines are similar, ratings are similar, costs are similar. Now, at last, there's an air compressor that's different. Schramm Pneumatractor—self-propelled 125 cfm compressor with tractor accessories. It's the "do-all" on any construction job because it not only operates air tools, *but* also loads, breaks-out concrete, trenches, grades. There's no end to the jobs it can do—yet its cost is much lower than the cost of a tractor, loader, backhoe *and* air compressor.

Just imagine how Pneumatractor could save time for you . . .

Always ready for work. No delays, no crews tied up; Pneumatractors go where needed—start work at once.

Eliminate a truck. The operator simply climbs into the seat and drives a complete 125 cfm compressor from job to job. Pneumatractors go where ordinary towed portables can't—do the work of an extra tractor.

Next time you plan to buy an air compressor or tractor, investigate the compressor that's different from all others—Pneumatractor. See your local Schramm Dealer, or write for your free copy of Catalog 5740.

See the Yellow Pages for local Sales, Service and Rental of Schramm Air Compressors.

Pneumatractor guard rail driving is one example of its versatility. It also plows snow, sweeps sand or gravel, operates 3-gang tamper or four single tampers, powers a host of air tools.

Universal movement of backhoe lifts, carries and places equipment and materials, as well as digs.

Schramm, Inc.

MANUFACTURERS OF AIR COMPRESSORS

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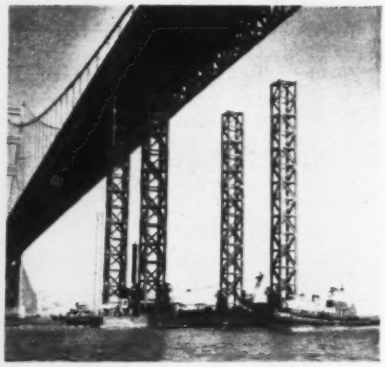


MOBILE platform will be used to lay Hyperion outfall pipe to depths of 200 ft.

The $73.7-million Markland Locks and Dam on the Ohio advanced to 40% completion. Construction of the locks alone is now 91% complete. This job calls for two parallel locks, 110 x 600 ft and 110 x 1,200 ft with 35-ft lifts.

Greenup Locks and Dam on the Ohio near Greenup, Ky., which will cost $58.8 million, is now 42% complete. **New Cumberland Locks and Dam,** some 54 miles down the Ohio from Pittsburgh, is 55% complete. The $42-million project, which includes two parallel locks and a dam, will replace the deteriorating and inadequate Ohio River Locks and Dams Nos. 7, 8 and 9.

Construction of the $76.6-million **New Richmond Locks and Dam** on the Ohio River near the town of New Richmond, Ohio, was started in April, 1958.

Modernization of existing Ohio River facilities continues with **Reconstruction Lock and Dam No. 41** at Louisville, Ky. The $49.8-million project is 11% complete.

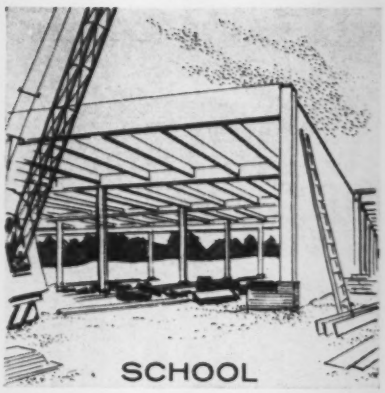
The first construction contract for the $64.9-million **Pike Island Locks and Dam,** on the Ohio River near Warwood, W. Va., is scheduled for award in 1959. Completion is set for 1964.

About 74% complete is the $12.4-million **Hildebrand Lock and Dam,** on the Monongahela River.

Several flood control projects are being undertaken by the Ohio River Division, Corps of Engineers. The largest is the $35.6-million **Sutton Reservoir,** on the Elk River in West Virginia, now 73% complete. Its storage capacity will be 265,300 acre-ft. **Dillon Reservoir,** on the Licking River near Zanesville, Ohio, with a 118 ft high earthfill dam and costing some $29.8 million, is 48% complete.

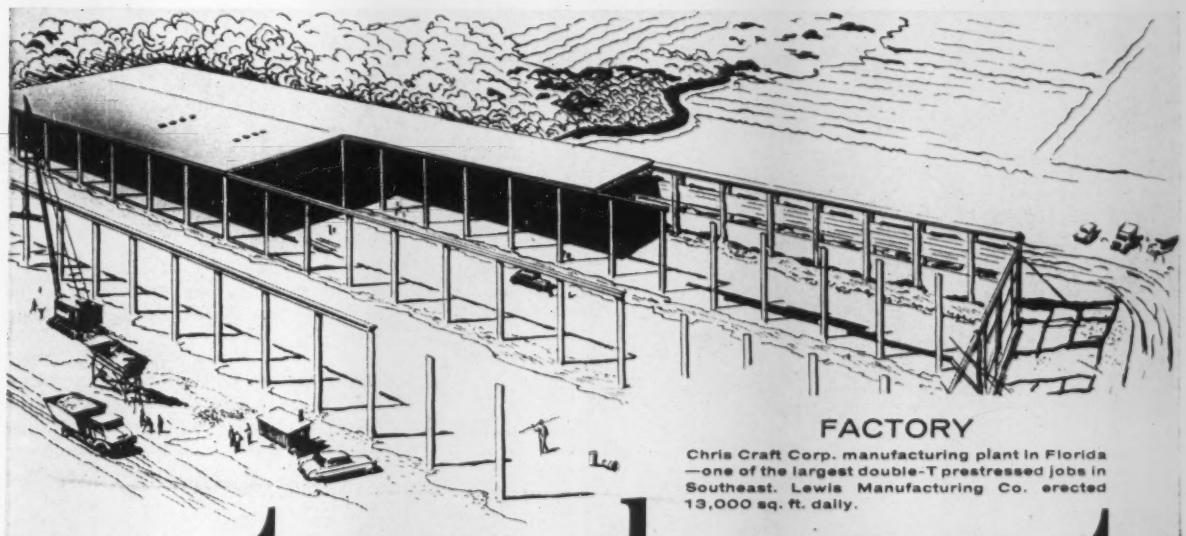
• **Lower Mississippi**—During fiscal year 1958 the Corps of Engineers spent $57 million for construction and maintenance in the Lower Mississippi River Valley. This figure will be increased

WAREHOUSE



SCHOOL

AUDITORIUM



FACTORY

Chris Craft Corp. manufacturing plant in Florida —one of the largest double-T prestressed jobs in Southeast. Lewis Manufacturing Co. erected 13,000 sq. ft. daily.

prestressed concrete

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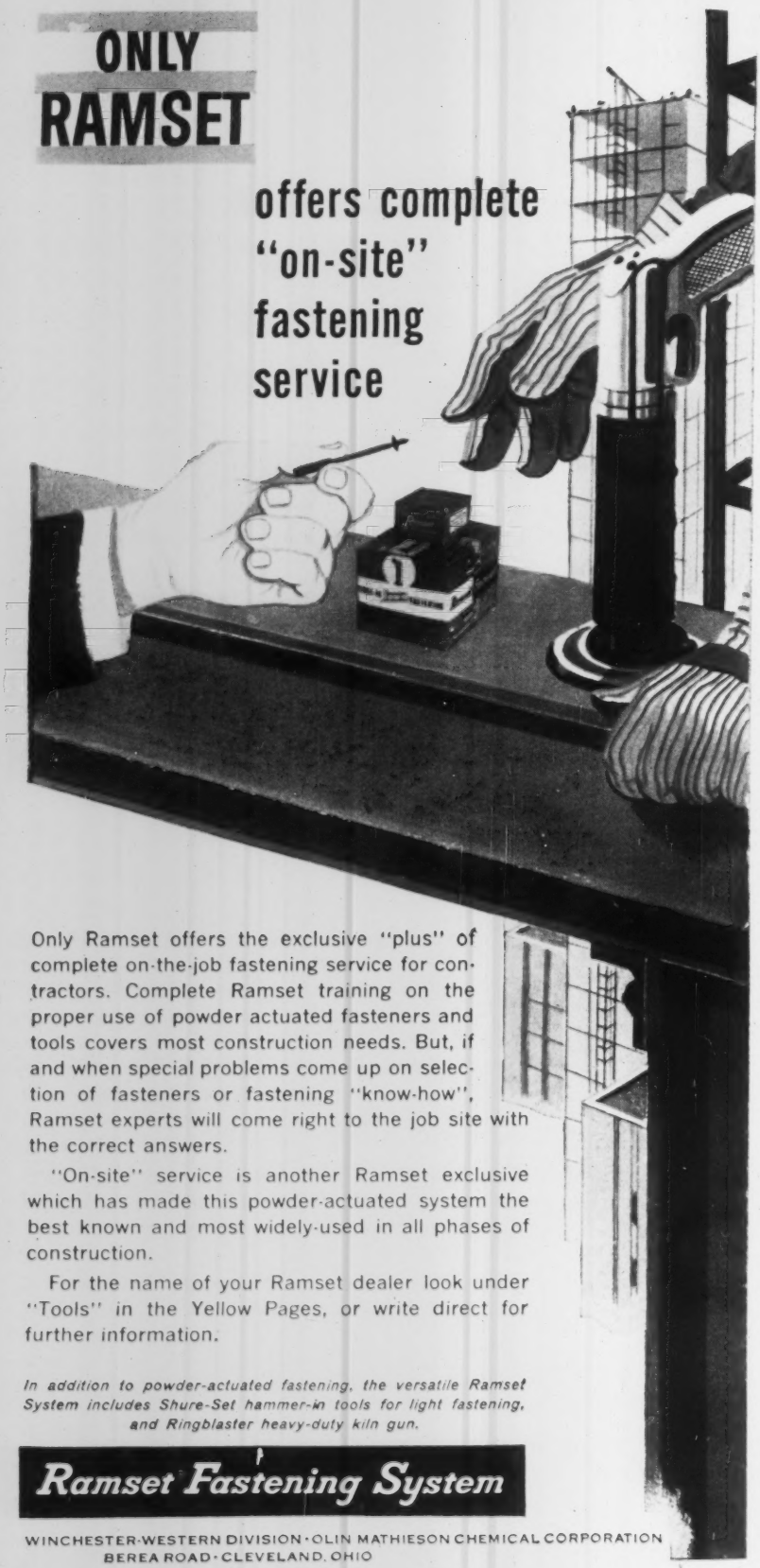

Only Ramset offers the exclusive "plus" of complete on-the-job fastening service for contractors. Complete Ramset training on the proper use of powder actuated fasteners and tools covers most construction needs. But, if and when special problems come up on selection of fasteners or fastening "know-how", Ramset experts will come right to the job site with the correct answers.

"On-site" service is another Ramset exclusive which has made this powder-actuated system the best known and most widely-used in all phases of construction.

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In addition to powder-actuated fastening, the versatile Ramset System includes Shure-Set hammer-in tools for light fastening, and Ringblaster heavy-duty kiln gun.

Ramset Fastening System

WINCHESTER-WESTERN DIVISION · OLIN MATHIESON CHEMICAL CORPORATION
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. . . River use and control

to about $67 million during the current year.

To date, slightly more than $1 billion has been allotted, and the 1,575-mile long main line levee system, backbone of the flood control plan, is now about 88% complete.

Channel stabilization under this program, estimated to cost about $468 million, is 84% complete. It includes 370 miles of river bank revetment.

Considerable construction is planned this year for the **St. Francis River Basin** single-purpose flood control project. When completed, it will contain 480 miles of levees, two pumping plants and 315 miles of channel improvements.

The four headwater reservoirs in the **Yazoo River Basin** are complete except for some recreational facilities. Channel improvement work designed to hasten floodwater run-off is 41% complete, and scheduled to be completed by 1962.

In the **Big Sunflower River** area, in western Mississippi, channel improvements to alleviate flooding and improve drainage conditions on 568,000 acres of rich delta land is 23% complete.

• **Old River Control Structures**—Construction of the comprehensive **Old River Control** project—designed to prevent the Mississippi River from flowing down the Atchafalaya River Basin—is 38% complete. This project is the first in which man has attempted to prevent diversion of a river of this size by means of control structures.

• **Harbor construction** — Right-of-way was secured and construction started last year on the **Vicksburg Harbor** project, which is now 18% finished. The dredged channel and the fill for **Memphis Harbor** are completed. Dredging and other authorized work at the **Baton Rouge Harbor,** initiated in January 1958, will be completed this summer.

• **Channel improvements**—The **Plaquemine-Morgan City Alternate Route** of the Gulf Intracoastal Waterway is being modified to straighten and enlarge the channel, at a cost of $30 million. Construction was started last year with a $3-million dredging contract on the $103-million **Mississippi River-Gulf Outlet.** The project is designed to provide an additional outlet from the Mississippi River at New Orleans to the Gulf of Mexico.

• **Tennessee Valley**—The new lock at Wilson Dam being built by TVA was nearing completion at the end of the year. Practically all the concrete has been placed, the upper gate has been in-

Here's the Sequence!

9:15 Shooting Cationic Bitumuls

9:20 Cover-stone is spread

9:25 Tandem rolling of cover-stone

"Flusher" test proves...

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IS YOUR BEST INSURANCE AGAINST SUDDEN SHOWERS

9:30 Flushing the finished Surface Treatment

Recently, we announced the availability of a new product:

CATIONIC BITUMULS.

We talked of adaptability to "difficult" aggregate; rapid set; resistance to early rains.

Since then, we have put this new material to many rigorous tests on actual jobs all over the country. We needed rain to show, dramatically, how Cationic Bitumuls protected new paving and surfacing against sudden showers. When we couldn't **get** rain we **made it!**

CONSTRUCTION DATA:

On a very revealing test in Long Beach, California, for instance, we used a street flusher to simulate heavy rain. On 1,100 ft. of 72-ft. wide street pavement, various sections were blocked out to provide "control" testing. These sections were "shot" with both regular grades and Cationic Bitumuls; were covered and rolled in rapid sequence. **Within 15 minutes after application of the binder,** the street flusher (as shown above) "watered" these sections with the equivalent of a heavy rain. The sections were then opened to traffic.

RESULTS:

The sections sealed with Cationic Bitumuls retained practically all cover-stone. As expected, the regular grade of emulsified asphalt "washed-out" under this severe test and most of the stone was lost under early traffic.

Many years of research, testing and development work have gone into the production of Cationic Bitumuls. This product offers two distinct advantages to the road building and pavement maintenance industries: it coats almost **all** aggregates, even those usually regarded as "difficult"; and it extends the normal working season.

It will pay you to get all the facts on NEW Cationic Bitumuls. Just call our nearest office.

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SAUERMAN NEWS briefs

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DragScraper Uses Island for Parking Lot Fill

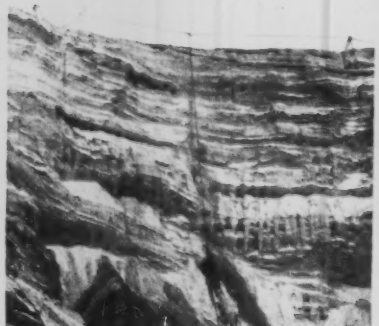
An island in the Kalamazoo River was used for parking lot fill by the Harrington Construction Co. of Fennville, Michigan. The job was handled by a Sauerman 3-yd. Crescent DragScraper and carrier assembly used with an Insley WB crane.

The hoisting line of the Insley served as track cable, running from the hoist drum through the middle sheave of the boom tip to a tree anchor on the island. The drag cable was attached to the front chains of the Crescent.

After digging and hauling to bank, the track cable was tensioned to lift the DragScraper and gravity return it to the excavation over 400 ft. away. Round trip took about a minute and a half. The 70-ft. crane boom was supported by two back stay cables leading from the boom tip to two tractors used as anchors.

(Condensed from Sauerman News No. 149.)

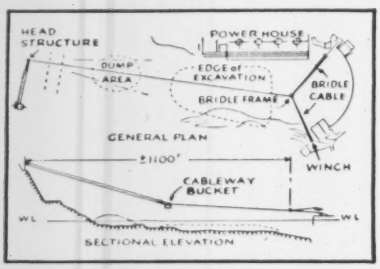
High Bank Digging



DragScraper works on face of 175-ft. bank, hauls load 600 ft. Rapid Shifting Tail Bridle changes line of operation.

(Condensed from Sauerman News No. 150.)

De-Rocking a Tailrace



When the Washington Power Co. completed its Cabinet Gorge power plant and dam, an accumulation of rock at the discharge of the draft tubes had to be removed to insure unobstructed flow for the tailrace.

A Sauerman 2½-yd. Slackline Cableway, equipped with a rapid-shifting bridle system, was selected to do the job. Over 28,000 cu.yds. of rock varying in size from 6 in. to 5 ft. have been removed since the Slackline was installed. It is a permanent installation and is used periodically to clear the area in front of the draft tubes.

The Slackline operates on a 1000-ft. span. Materiai is excavated from 35 ft. of water and conveyed in the 2½-yd. bucket to a waste pile about 150 ft. below the tubular steel head mast. Power is supplied by a hoist located 190 ft. from the mast. The bucket and carrier assembly rides on a track cable, the lower end of which is attached to a rapid-shifting bridle frame controlled by a 10-hp. motorized spool-type winch. The rapid-shifting device permits the bucket's line of operation to be shifted laterally.

(Condensed from Sauerman News No. 143.)

MORE NEWS AND INFORMATION

Issues of Sauerman News giving greater detail about the installations on this page are available on request. For full information, tell us your interest or requirements and ask for catalog. Contact Sauerman Bros., Inc., 632 S. 28th Ave., Bellwood, Ill.

. . . River use and control

stalled, and the main valves assembled. The main feature remaining is the installation of the large lower miter gates. When the lock is opened to traffic in the middle of 1959, major adjustments will be made to the existing smaller lock to provide dual facilities. TVA plans to build locks of similar size at the three successive upstream dams—Wheeler, Guntersville, and Hales Bar.

6. Atlantic Ocean Basins

• **New England Flood Control**—The New England Division of the Corps of Engineers pushed forward a number of flood control projects throughout 1958.

Along the Connecticut River Basin, **Barre Falls Dam and Reservoir**, part of the Connecticut Valley Flood Control System, has been in operation since May.

Also in operation, though not quite complete, is **Otter Brook Project's** 1,288-ft-long and 133-ft-high earthfill dam. **Ball Mountain Dam and Reservoir**, a $10.5-million project now 42% complete, is the highest flood control dam in New England.

Three other Connecticut River Basin projects about 25% complete and totaling $23.4-million are the **North Hartland Dam, North Springfield Dam and Reservoir** and the **Townshend Dam and Reservoir.**

Along the Housatonic River Basin the $15.9-million **Thomaston Dam and Reservoir** is 30% complete. It is the key unit on the heavily flood-damaged Naugatuck River in Connecticut.

Another major flood control project for which contracts will be awarded during 1959 is the first and most complex in the New England territory—the $30.8-million **Hopkinton-Everett Dams and Reservoirs** in the Merrimack River Basin. Planned are two dams, two spillways, two canals and four dikes.

Two major projects in the Corps of Engineers' New England Division area are well under way. One is the 84% complete **Boston Harbor project** and the second is the 48% complete **Weymouth Fore River** project.

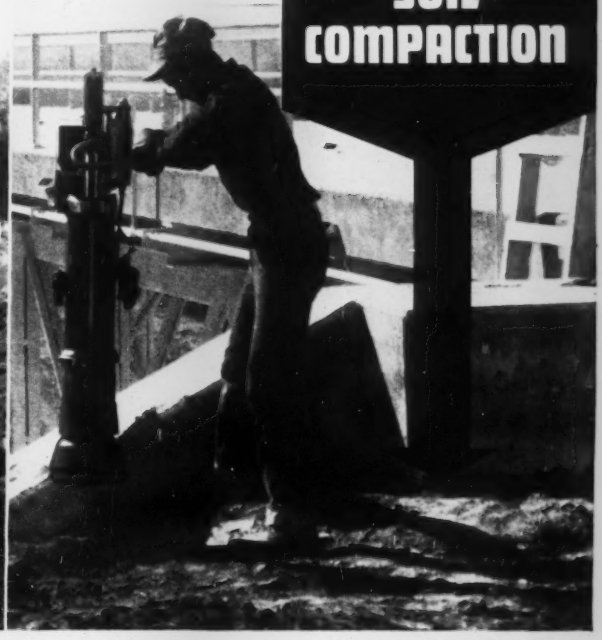
• **Mobile River Basin**—The Corps of Engineers' $21-million Jackson Lock and Dam on the Tombigbee River is about 20% complete. The site features a concrete fixed-crest spillway in the river's channel, a gated spillway section and a 84-ft lift lock, 100 ft x 600 ft. The project will be the lowest of a series of locks providing a nine-foot navigation channel to Port Birmingham, Ala.

• **Savannah River Basin—Hartwell Dam** on the Savannah River is about 20% complete. This $98.6-million Corps of Engineers project will consist of long earth embankments, a concrete non-

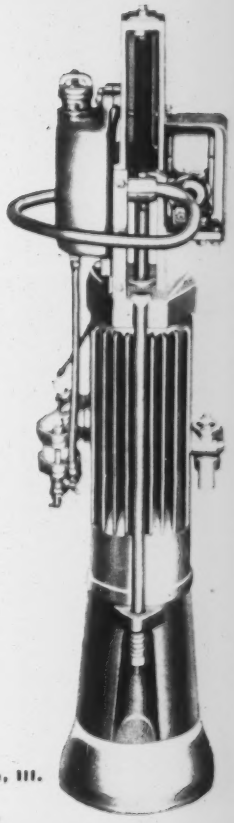
Where SPECIFICATIONS call for . . .

HIGH DEGREE SOIL COMPACTION

PHOTOS: *Left*—Tamping fill around 4 ft. concrete pipe culvert on New York State Thruway Extension near West Seneca, N. Y. *Right*—Compacting earth fill around abutment on Benbrook Dam construction near Fort Worth, Texas.



BARCO RAMMERS are THE ANSWER!



YOU can't get *high degree* SOIL COMPACTION by "patting it" or "shaking it." For deep, penetrating force to produce 95%, 97.5%, or even 100% compaction, Barco Rammers are THE ANSWER. For many soil conditions, they are the only answer.

THE KEY TO BETTER CONSTRUCTION—High degree soil compaction is worth every cent it costs. Barco Rammers are especially effective for compacting fill in restricted areas — close to walls, culverts, abutments, around footings, and in trenches—on all kinds of construction jobs: Toll Roads, Freeways, and Highways; Air and Missile Bases, Hydro-electric Power and Flood Control Dams, Bridges, Buildings, and Housing Developments.

ONE MAN OPERATION—On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On 18" trench backfill, using lifts up to 24", the rate is 360 to 600 feet per hour.

ASK FOR A DEMONSTRATION—We will be glad to arrange a demonstration for you; see our nearest distributor or write. SEND FOR A COPY OF CATALOG 621.

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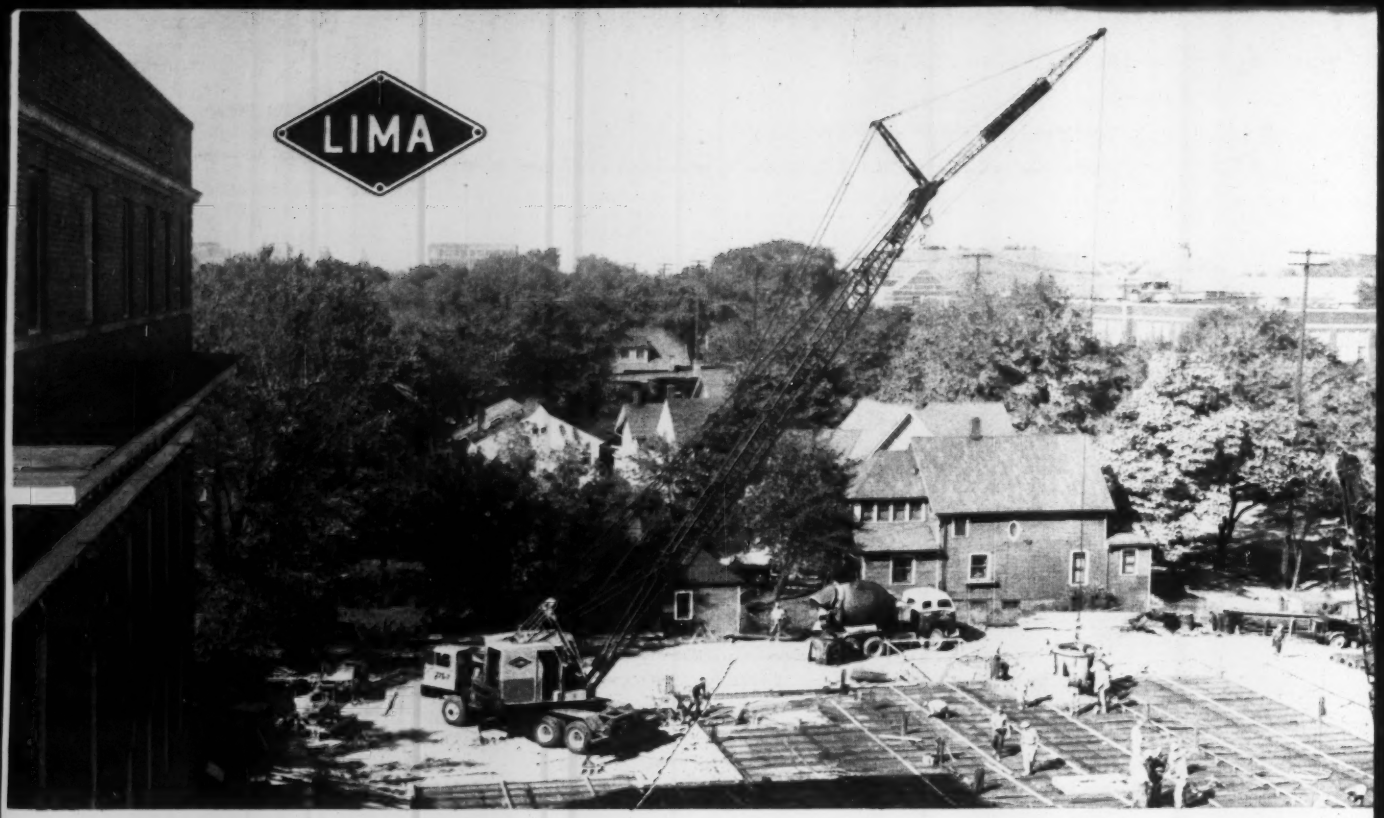
for Granular Fill and Bituminous Surfacing



LIMA Cranes, Shovels, Draglines designed to deliver top performance, low maintenance

Tops in their class! LIMAS cannot be surpassed for outstanding efficiency, ease of operation, really dependable service and low maintenance. The hard-working LIMAS are versatile machines. They can be used as shovels, cranes, draglines, clamshells or pull shovels by simply changing front end equipment.

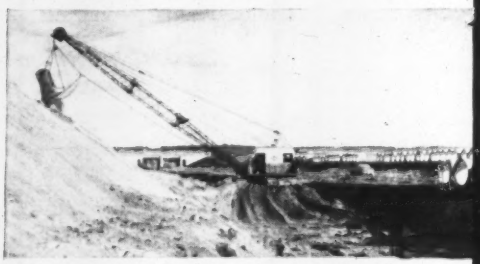
Their big-job power, sturdy construction and low maintenance qualities combine to deliver reliably high output and high profits.

Air control is available on all LIMAS. Big, roomy cabs and ease of control mean greater comfort and safety for your skilled operators . . . minimum operator fatigue for maximum high-speed production.

Even the biggest LIMAS will maneuver easily and travel safely over most types of ground. They have plenty of ground-gripping stability even when working long booms at low angles. There is a LIMA to fit your requirements—shovel capacities ½ to 6 cu. yds., crawler cranes to 110 tons. Cranes up to 70 tons capacity are available on rubber.

Get the full story on the 18 basic models of these tough, versatile machines. Learn for yourself why LIMA is the choice for big and little jobs everywhere! See your local distributor or write us today!

LIMA Type 1250 Shovel, equipped with a 28' boom, 22' dipper handle and 3½-cu. yd. dipper, is designed for big-capacity excavating jobs and heavy-duty crane service.



LIMA Type 604 Dragline, equipped with a 70' boom working on a large sewer construction project.

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Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

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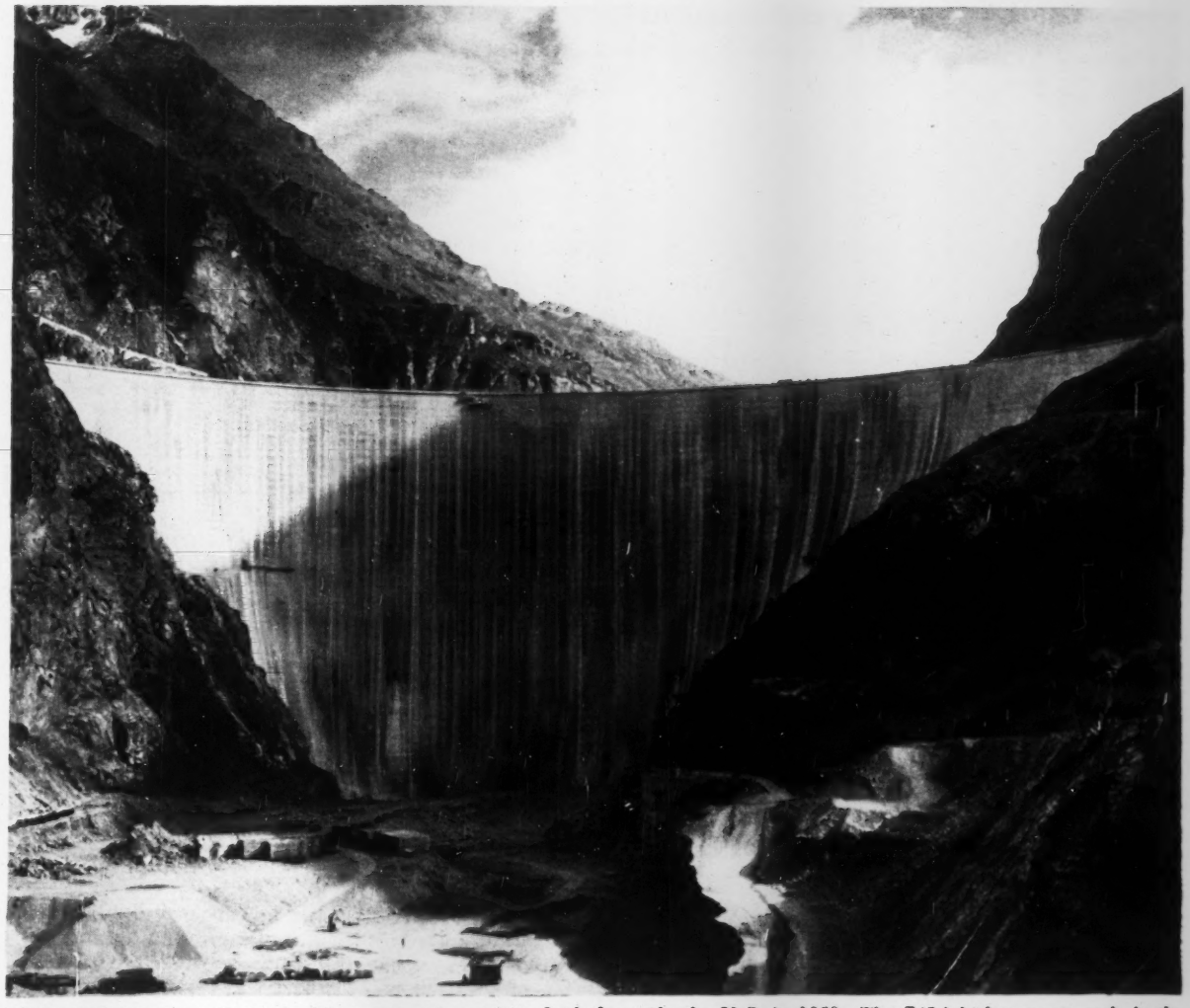


MAUVOISIN DAM in Switzerland is among major projects finished outside the U.S. in 1958. The 745-ft-high concrete arch is the highest dam completed anywhere.

overflow section, a gated spillway and a powerhouse with five 66,000-kw units. Hartwell is the second project in an 11-dam plan for development of the river for flood control, navigation and power.

• **Apalachicola River Basin**—The Corps of Engineers' **Walter F. George Lock and Dam** on the Chattahoochee River, near Ft. Gaines, Ga., is about 18% complete. Estimated to cost $86 million, the project will comprise a gated concrete spillway, an 82 x 450-ft lock with a maximum lift of 88 ft, a powerhouse with five 32,500-kw units, and flanking earth embankments. This job is an integral part of a four-project system designed to provide nine-foot navigation to Columbus, Ga.

The $13.6-million **Columbia Lock and Dam** will be started in 1959. It is a navigation project to be constructed between the completed Jim Woodruff Lock and Dam, downstream, and Walter F. George Lock and Dam, upstream.

• **Central and Southern Florida Project**—This Corps of Engineers flood control and major drainage project is estimated to cost about $323.8 million of which $86.3 million would be borne by local interests. On the job site which encompasses the upper St. Johns River Basin, Kissimmee River Basin, the East Coast and Lake Okeechobee Everglades areas, a total of 780 miles of levees and 535 miles of canals have been built. In the Everglades areas, 10 pumping stations with a total of 12,385,000 gpm capacity have been installed to make the project about 18% complete.

• **Niagara Power Project**—$452.9 million in contracts have been awarded. Construction is under way on the Niagara Power Plant, the Pump Generating Plant, intake and waterways, and related facilities. Two parallel conduits from the Niagara River to a forebay between the two plants were 16% complete by the end of 1958. The main power plant was 40% complete. Production of first power from the $704-million project is expected in early 1961.

• **St. Lawrence Seaway and Power Project**—On July 1, 1958, the International Rapids section of the St. Lawrence Seaway was put to work with the blasting of the last cofferdam. On July 4, first commercial shipping passed through the two U.S. locks (Eisenhower and Snell) near Massena, N. Y., bypassing the completed Long Sault Spillway Dam and the St. Lawrence Power Dam. Impending completion of four locks further downstream in Canada will wind up the project.

More than five miles of extra heavy galvanized Wrought Iron Pipe, from 1½-inch to 3½-inch, were used in the construction of the Treasure Island, Florida, Sewage Collection Plant.

Wrought Iron Pipe provides a bulwark against corrosion at Florida's Treasure Island Sewage Treatment Plant

Included in this system are eight pneumatic ejector lift stations which are supplied with compressed air transmitted in Wrought Iron Pipe from the blowers and storage located at the Treatment Plant.

Compressed air piping used in the activated sludge process must provide maximum operating life, minimum maintenance.

At the new Treasure Island, Florida, Sewage Treatment Plant, consulting engineers specified corrosion-resistant Wrought Iron Pipe for this service. Severe internal corrosion and clogging from loose rust occur with ordinary piping materials in this service. But not with Wrought Iron. Its corrosion product is dense and highly adherent, and actually *protects* the underlying metal from further corrosive attack.

Today, specifiers and plant operating men are getting a Wrought Iron that is the most versatile material yet developed to help fight corrosion. New 4-D Wrought Iron faces corrosive attack with far greater resistance, even, than standard Wrought Iron, its dependable predecessor.

4-D was achieved by substantially increasing the deoxidation of the base metal, slightly increasing the phosphorous content and using a more siliceous iron silicate. 4-D is available now from your distributor. Write us for new 4-D Wrought Iron literature. A. M. Byers Company, Clark Building, Pittsburgh 22, Pa.

City of Treasure Island Sewage Plant Improvement
Consulting Engineers: Gilbert W. Clifford & Associates
Piping Contractors: Paul Giuliani & J. E. Milam Co.

BYERS 4-D WROUGHT IRON

TUBULAR AND FLAT ROLLED PRODUCTS

ALSO AMBALLOY ELECTRIC FURNACE QUALITY STEELS AND PVC PIPE AND SHEET

Corrosion costs you more than Wrought Iron

Long Reach for Transit Crane

Bucyrus-Erie's 30B transit crane lifts 45 tons with a 40-ft boom at a radius of 15 ft.

The machine can be used as a 1- to 1½-yd hoe, 1- to 1¾-yd shovel, 1- to 1½-yd dragline and as a clamshell.

Equipped with a jib, the crane will reach out to 140 ft. An air-operated boom hoist and engine master clutch complement an air-control system of the unit.

A 6x4 or 8x4 carrier is available with gasoline or diesel engine. Bucyrus-Erie Co., South Milwaukee, Wis.

Truck Mixer Is All-Aluminum

The first all-aluminum truck mixer was recently delivered to the North Star Sand & Gravel Co., Seattle, Wash. All framework shafting, blades, chutes and other parts are of aluminum alloy.

The new unit is a 7-yd mixer, but weighs almost 5,000 lb less than a standard 5½-yd steel mixer. Construction Machinery Co., Waterloo, Iowa.

Smaller, Lighter V-Belt Does the Job at Less Cost

Smaller and lighter V-belt drives now do the same job as heavier ones and at a lower cost, according to Dodge Manufacturing.

The company says triple savings in the new line, Dyna-V, come from stronger metals for sheaves and synthetic rubbers and fibers for the belts. The taper-lock drives cover the complete range of horsepower capacities available in the company's conventional drives.

A representative comparison is made for the 3 hp, 1,750 rpm, 2.41:1 ratio drive: Dyna-V taper-lock drive uses two belts where the conventional taper-lock drive has three.

Outside diameter of the new drive sheave is 3.35 in. against 4.15 in. for the old; the driven sheave is 8 in. against 8.95 in.; width is 1 3/32 in. against 2½ in.

Center distance in the new is 10.8 in., 12.3 in the old. The new drive weighs 18 lb, the old 24.7 lb.

The Dyna-V drive costs $22.50, the old sells for $27.38.

The new drives come in two standard groove sizes, a ⅞ in. and a 2 in. The first forms a series for 1 to 50 hp drives; the second for up to 200 hp. A made-to-order series will take care of up to 1,500 hp.

The belts have a crowned top and concave sidewalls for maximum efficiency. Dodge will continue to manufacture and stock the old line of taper-lock drives. Dodge Mfg. Corp., Mishawaka, Ind.

Two Heavy-Duty Diesels Swirl and Squish Air

Two heavy-duty engines by Allis-Chalmers give a 9 to 1 weight-to-hp ratio.

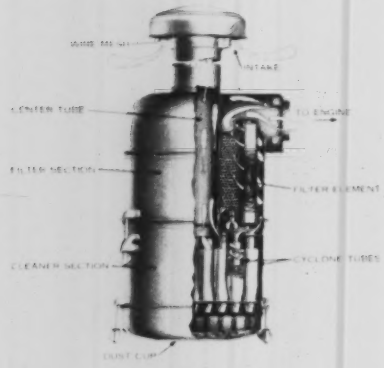
The 21000 is turbocharged and develops 340 hp at 2,000 rpm. The 16000 is naturally aspirated and develops 230 hp at 2,000 rpm. Basic weight of each engine is 3,000 lb.

Both are 6-cylinder, 4-cycle, in-line engines. They feature two-stage, controlled-turbulence combustion. An initial "swirl" is produced on the intake stroke; a second-stage turbulence, or "squish," builds up as the pistons near the top of the compression stroke. Efficient firing is the aim.

The engines are also available as 130- to 200-kw standby generator sets. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

(Turn the page)

These Cyclones Clear the Air



A dry type air cleaner is said to remove 99.8% of all dirt from a diesel engine's intake air. The unit has been developed for use on the Caterpillar DW20 and DW21 tractors.

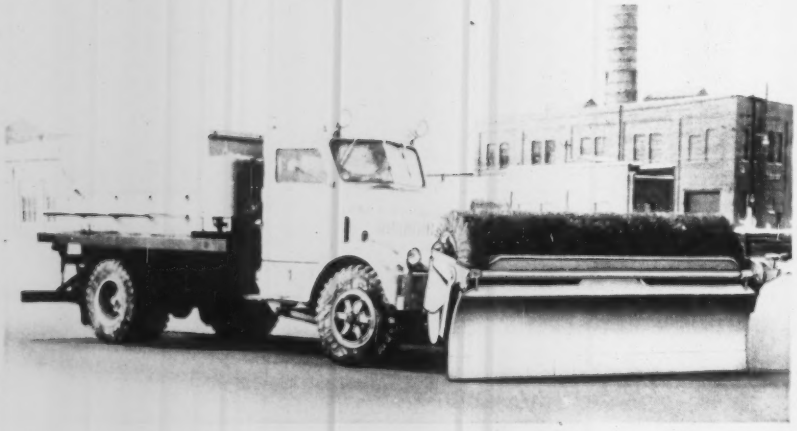
The cleaner is made up of a housing that contains an aluminum center tube, a multi-cyclone precleaner, a disposable resin-impregnated cellulose filter and a dirt-collecting tray that can be quickly and easily removed.

Air drawn through the stack cap passes down through the center tube and enters the precleaner. The precleaner consists of two aluminum spirals in each of a group of vertical, funnel-shaped nylon tubes.

As the air flows along the spirals it begins to swirl. This sets up a centrifugal action that forces the dirt particles —which are heavier than air—to drop out of the nylon tubes into the collecting tray. About 95% of the dirt particles drawn in with the air is removed in this way.

The air then travels upward, through small aluminum tubes centered in the nylon funnels, to the filter element. There the remainder of the dirt is removed. The cleaned air finally is directed to the intake manifold of the engine.

The dirt-collection cup is removed and emptied once a day. The dry type filter element is usually removed and cleaned at engine oil change periods. This is done with a reverse flow of water or compressed air. The cylindrical filter can be checked by holding a lighted bulb on the inside. If light shows through, the filter should be replaced. Caterpillar Tractor Co., Peoria, Ill.



Plow and Broom in One Unit

A piece of maintenance equipment combines a snowplow and rotary broom for removal of snow and sleet. The plow handles the snow and the sweeper takes care of water, slush and sleet.

The street-cleaning unit, Model S-40, is made to be mounted on four-wheel-drive trucks. The plow angles 32 deg right or left. The broom is hydraulically rolled up and over to be positioned in front of the plow. The broom also can be angled at 32 deg while operating at speeds of 8 to 15 mph.

The broom cleans a 10-ft path, throwing material 15 to 25 ft. All controls can be mounted on the truck cab dashboard. Lull Engineering Co., 3045 Highway 13, St. Paul, Minn.

Remote Hoist Controls Allow Automatic Dumping

Automatic, remote controls are incorporated in a new model of a heavy-duty hoisting machine for the building construction industry.

Called a "Hoistower" by its inventor and manufacturer, the basic unit—with manual controls—was first introduced in 1951.

The hoist can raise or lower loads up to 2,500 lb at a maximum speed of 160 ft per min. It is self-erecting to a working height of 45 ft, with additional heights secured by adding extra tower sections. To date, the machine has been successfully operated to a height of 165 ft, according to the manufacturer.

The most unusual aspect of the hoisting machine is that it can be operated by workmen at all floor levels or on the ground. This remote control feature eliminates one operator, while built-in safety cut-offs prevent the 6.5 ft by 5.5 ft hoisting platform from over-running the limits of the tower or dropping at excessive speeds.

Powered by a 25-hp engine, the new hoisting machine is electrically actuated and controlled through its own self-contained 12 volt direct-current power supply system. The machines are trailer or truck-mounted for rapid moving.

(New Products continued p. 168)

The CLEVELAND 240 TRENCHER

12′ x 2½′ V CONVEYOR

- **Power-Shifted**
- **Power-Folded**

controlled from operator's seat

WORLD'S FINEST TRENCHER CRAWLER

For 20″ dia. pipe 240 here digs trench to average 4′ deep, 34″ wide at bottom, sloped to approx. 5′ wide at top.

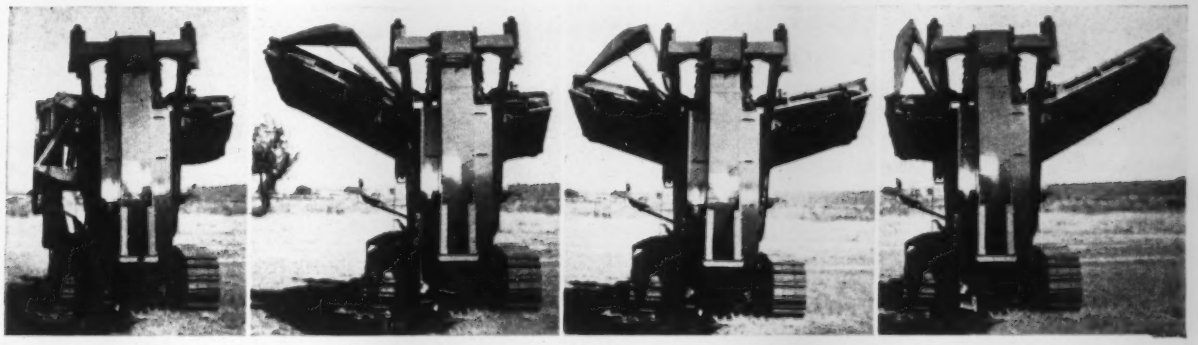
DIGS FULL 3′ WIDE by 6′3″ DEEP

V CONVEYOR . . . provides maximum clearance under digging wheel rims . . . allows higher heaped loads without clogging . . . provides constant elevating angle for faster, higher spoil discharge . . . reduces rolling and tumbling . . . has stronger, torsion-free construction . . . employs huskier, longer-lived bearings.

POWER-SHIFT . . . operator controls hydraulic shifting and positioning of conveyor . . . digs past poles, trees, fences . . . places spoil where needed . . . all without leaving seat, without interrupting other operations.

POWER-FOLD . . . brings conveyor's 12-foot length down to within trencher's overall 8-foot width . . . permits transport without special highway permits . . . same automatic system unfolds conveyor to digging position.

FINEST CRAWLER on any trencher . . . double flanged wheels, rollers and sprockets with wide spaced teeth . . . drives on each end of 1½″ dia. hardened pins . . . completely eliminates pockets for dirt, stones, etc. . . . gives greater track stability . . . lengthens wear life . . . sprockets, wheels and idlers ride on sealed ball or roller bearings requiring only 200-hour lubrication . . . has big 16″ x 3″ hydraulic steering brakes . . . a tremendously long-lived, trouble-free, easy-rolling crawler track.

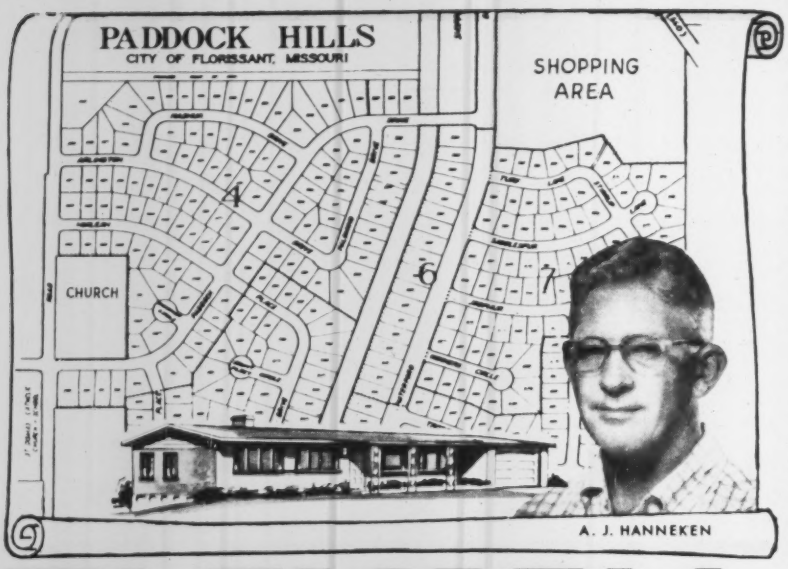


Power-folded | Power-shifted, left | Centered V Conveyor | Power-shifted, right

Good Everywhere ®

The CLEVELAND TRENCHER Co.

20100 St. Clair Avenue • Cleveland 17, Ohio



FLEXCELL

REG. U.S. PAT. OFF.

NON-EXTRUDING FIBER EXPANSION JOINT

In 2500-Home Project

"Does the job best for streets, curbs, and sidewalks," says big St. Louis construction company

"Building a city of quality homes like this calls for materials that meet highest standards of performance," says A. J. Hanneken, manager of Israel Brothers Construction Co. "That's why Flexcell Non-extruding Fiber Expansion Joint was specified throughout for Mayer, Raisher, Mayer's huge Paddock Hills development near Florissant, Missouri."

Flexcell Fiber Board bonds firmly to concrete, compresses without extruding, re-expands to keep joints filled. Uniform asphalt impregnation. Tough, rigid, light in weight. Easy to cut and install.

Your Flexcell Distributor is equipped to fabricate shapes and strips to your specifications. Call him!

WRITE FOR SAMPLES AND NAME OF YOUR NEAREST DISTRIBUTOR

EXPANSION JOINT INSTITUTE

THE CELOTEX CORPORATION

120 SOUTH LA SALLE STREET • CHICAGO 3, ILLINOIS

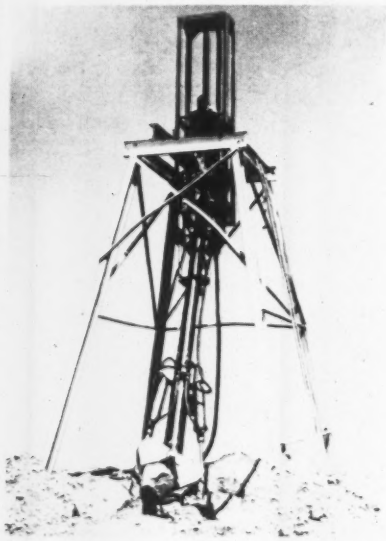
Story begins p. 166

For remote operation, a stop-lock safety switch gives workmen on all floors positive and exclusive control. A man on the fourth floor, for example, can lock the platform at his level until ready to release it.

The machine can be pre-set to deliver a load to a particular height at 2-in. intervals. When hoisting concrete in a special bucket, the dumping stop can be synchronized with the limit switch for a private and "self-cleaning" dump.

In the event of an electrical or mechanical failure, or a slack cable, the machine stops automatically. The platform is power-controlled during all operations by three buttons.

After four years of development, the automatic hoisting tower has been field-tested successfully in five midwestern and one southern state. Buck Equipment Corp., 720 Anderson Ferry Road, Cincinnati 38, Ohio.

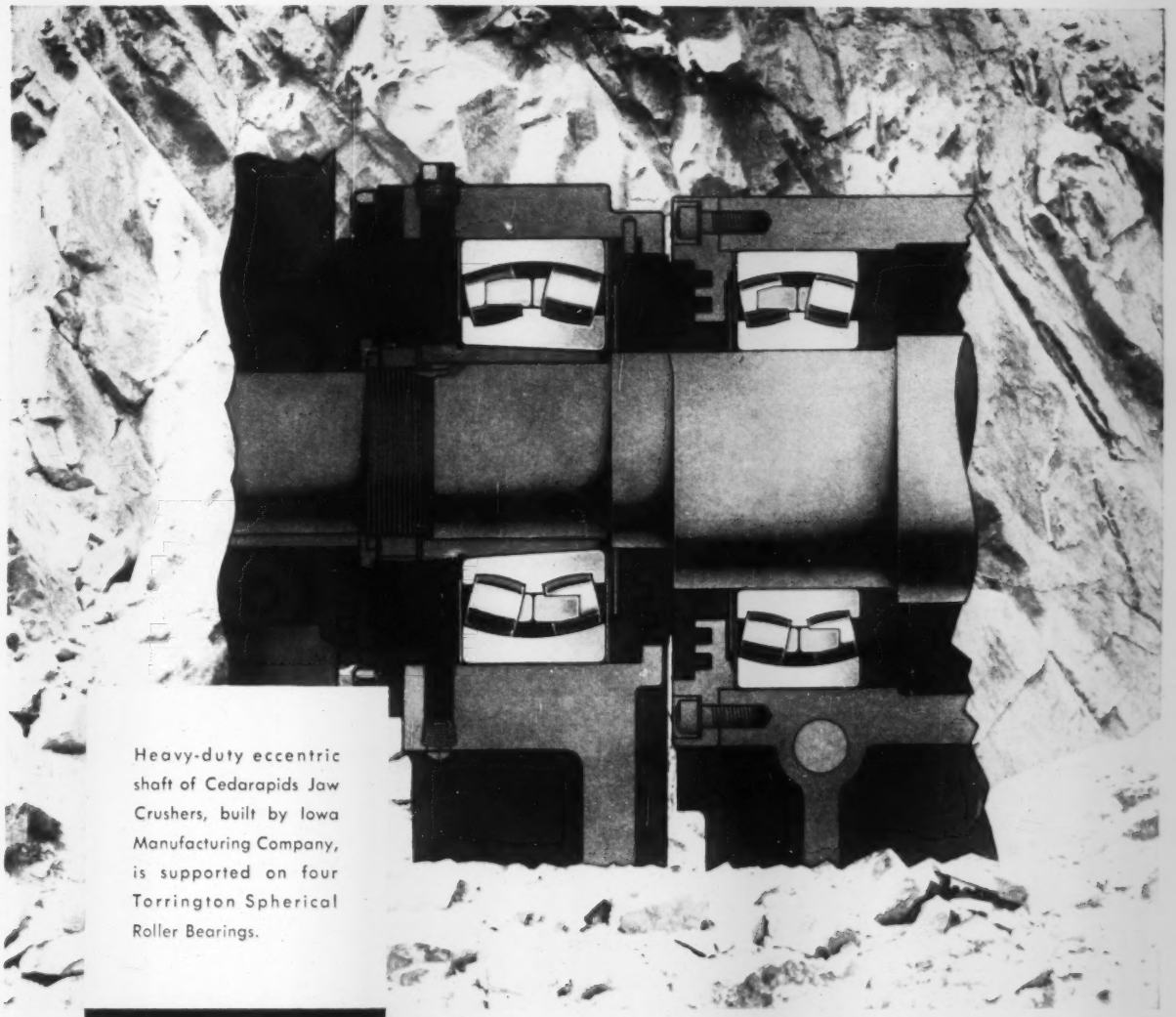


Incline Shaft Mucker Made for Small Openings

A small, compact "Betsy" incline shaft mucker is designed to work efficiently in limited openings. The machine can operate in circular shafts of 6 to 10 ft diameter, and in compartment shafts from 4x7 ft to 14x7 ft.

The air-operated rig has a ¾-cu-yd clamshell. Its boom can move 12 ft forward, 6 ft back and 12 ft to either side of vertical. Boom length is 13 ft 3 in.; boom extension is 8 ft. A safety cage at the top of the boom houses the sole operator. Shaft & Development Machines, Inc., Salt Lake City, Utah.

(New Products continued p. 172)



Heavy-duty eccentric shaft of Cedarapids Jaw Crushers, built by Iowa Manufacturing Company, is supported on four Torrington Spherical Roller Bearings.

Send for the new Torrington Spherical Roller Bearing Catalog #258

Designed for tough service

Cedarapids Jaw Crushers are designed throughout for tough, day-in, day-out service, right down to the bearings used on the eccentric shaft.

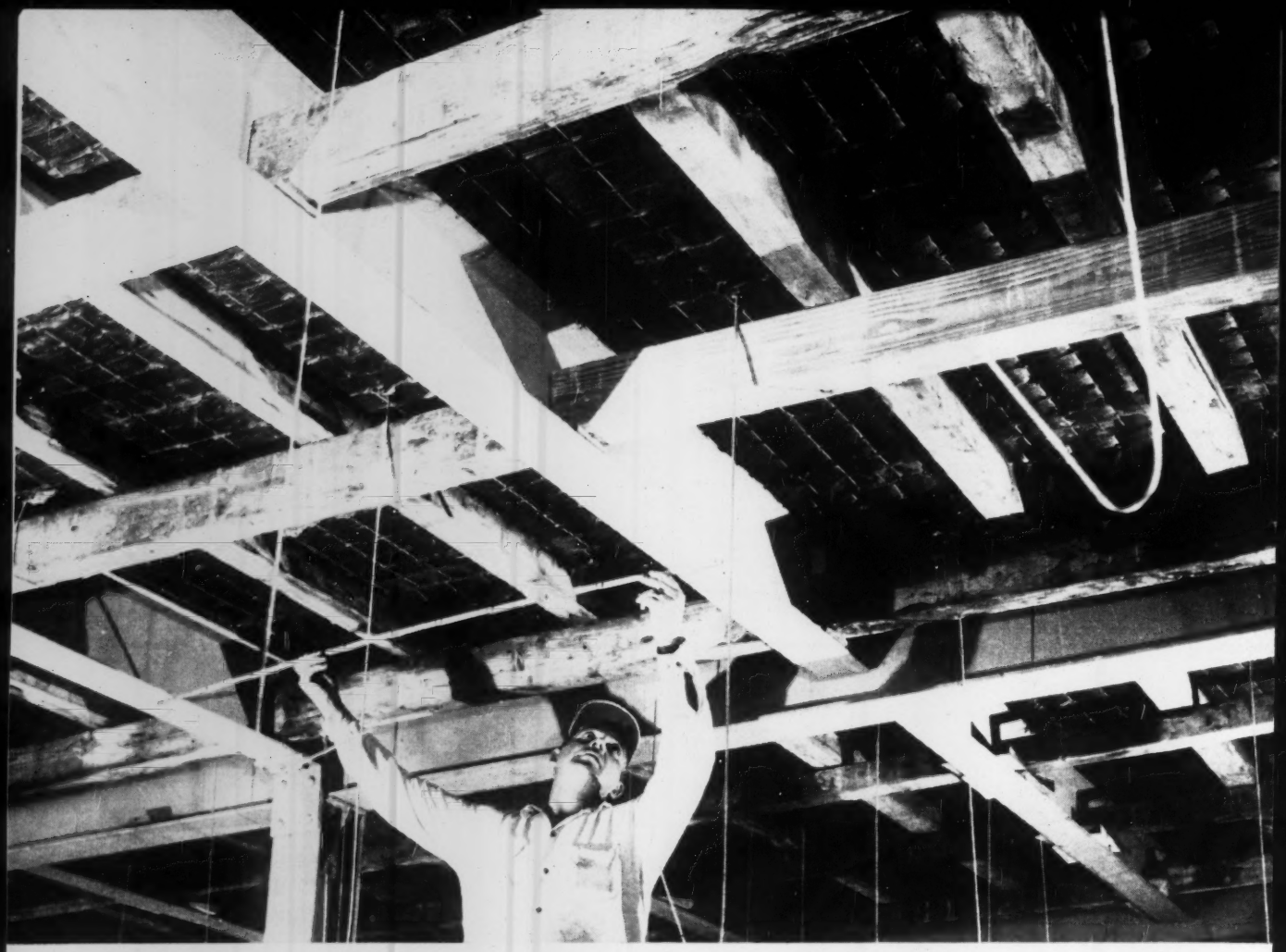
Torrington Spherical Roller Bearings are used because of their ability to align under load, rugged construction, stamina and stability. These bearings provide high radial and thrust capacity—more than enough to withstand the severest loads and shocks the jaw crushers can deliver in hard service.

Torrington Spherical Roller Bearings also are used in Cedarapids roll crushers, hammermills and impact breakers—and in many other construction equipment applications. For your toughest jobs, rely on Torrington Bearings and Torrington engineering experience. **The Torrington Company, South Bend 21, Ind. and Torrington, Conn.**

TORRINGTON BEARINGS

District Offices and Distributors in Principal Cities of United States and Canada

SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE • BALL • NEEDLE ROLLERS • THRUST



Steeltex easily spans six-foot centers on the fifth and sixth floor addition to Henry Ford Hospital in Detroit where it is supported by temporary shoring during pouring and curing. Bar mats provide reinforcing while Steeltex floor lath gives form to 3½ inch slab. Previously Steeltex was used on only 2- to 3-foot centers. The architect's decision to use Steeltex instead of wooden forms for six-foot spans was something new, but he soon saw it pay off as . . .

New use for Steeltex saves $26,000 at Henry Ford Hospital in Detroit

On Henry Ford Hospital's fifth and sixth floor addition, a new use for Steeltex floor lath piled up savings of approximately $26,000 on cost of materials and almost 50 percent on labor.

Architects for the $3½-million job approved Steeltex and bar mats to support 200,000 square feet of 3½ inch concrete slab set on six-foot centers by an ingenious method.

Previously, Steeltex wire mesh reinforcing—sold by Pittsburgh Steel Products Division of Pittsburgh Steel Company—had been used on centers two to three feet apart.

On jobs where the centers were farther apart, the architect usually specified a wooden forming material. Bar mats provided the reinforcing.

But Mike Sonk, Pittsburgh Steel Products Detroit district sales manager, had another idea.

He thought Steeltex could not only provide waterproofed forms less expensively for the Detroit hospital but help the bar mats make a stronger slab.

Sonk approached the architects with his idea. He pointed out Steeltex' cost saving advantages, speed of installation and ease of handling.

Whitacre Engineering of Canton, Ohio, contractors for the Steeltex-bar mat installation, also found out quickly how well Steeltex fills their needs.

The use of Steeltex brought a savings of approximately 50 percent.

Instead of spending many hours installing wooden forming material, laying bar mats and installing shoring, here's all Whitacre Engineering workmen installing the floors had to do:

Unroll lightweight Steeltex, cut it, tighten it, clip it and lay the bar mats —all in much less time.

The Steeltex-bar mat combination

Steeltex gives clean, neat appearance underneath slab after shoring is removed. Pittsburgh Steel Products Salesman Russ Nutter shows A. M. Downes, field engineer for sub-contractor, Whitacre Engineering, how easily ceiling hangers were placed through Steeltex paper, thereby eliminating costly drilling of individual holes when wooden forms are used. Architect: Albert Kahn Associated Architects and Engineers of Detroit.

also requires temporary shoring. But there's one big difference. Once shoring is removed, Steeltex is not dismantled as wooden forms are. Result? Better safety, better housekeeping, greater time savings.

Steeltex' speed of installation and easy handling really impressed Whitacre Foreman Mike Malett. He said:

"This is the first time I've seen Steeltex used primarily for its forming ability. I'm pleased with it.

"It certainly reduced forming costs. It took three men only one day to install 3,500 square feet of Steeltex on one of the floor sections.

"With wooden forms, it would have taken ten men two days."

"I also like the way Steeltex permits quick, easy installation of ceiling hangers," Mr. Malett added.

"All you do is stick the hangers through Steeltex paper so they protrude below where the ceiling is hung.

"With wooden forms we would have had to drill hundreds of holes for the hangers. That takes a lot of time and makes labor costs much higher."

A. M. Downes, field engineer for Whitacre Engineering, added: "I like the way Steeltex fits snugly around columns and pipes. It also cuts down drip-through of cement. Both advantages are a great help.

"What's more, our workmen can walk safely on Steeltex during installation and while concrete is being poured.

"Steeltex is ideal," Mr. Downes declared. "It gives reinforcing throughout, acts as a form and aids in curing the slab."

Steeltex' advantages can be put to work for you, too, on an application like that at Henry Ford Hospital. Or you might have one where centers are closer.

But no matter what the application, Steeltex is available to cut labor and material costs and insure stronger, more durable slabs.

Complete engineering advice is available at any of the Pittsburgh Steel Products Sales Offices listed here.

Call today . . . pocket the savings tomorrow.

▶ **See Sweets Catalog Section 2-B**

Steeltex®

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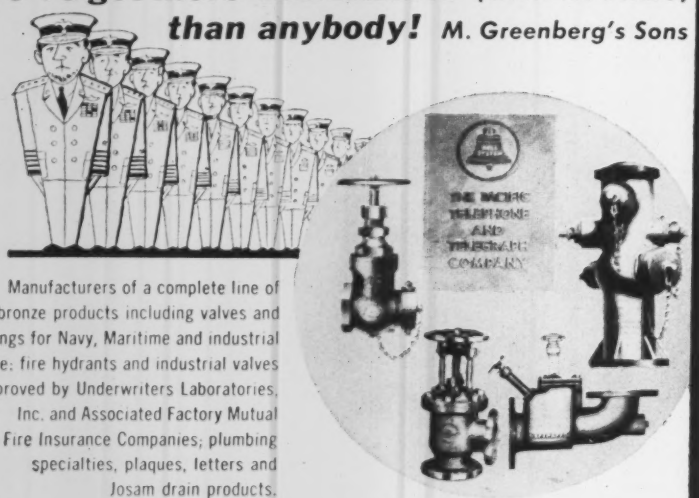

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Underpinning & Foundation Co., Inc. installed the steel bearing piles, underpinning adjoining structures and protected deep excavation banks for this unusual and difficult foundation job at Washington Square for the new Loeb Student Center of New York University. Caristo Construction Corp., Gen. Contractors; Harrison & Abramovitz, Architects; Edwards & Hjorth, Struc. Eng.

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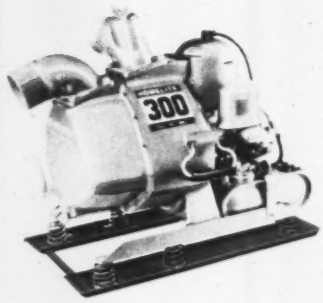
. . . New Products



Three Homelite Pumps Feature New Impeller

Three new 3-in., self-priming centrifugal pumps announced by Homelite are models SS3-1, SS3-1R and SS3-1P. These units in the "300" series were designed for use by contractors, builders, utilities and municipalities.

The engine is a two-cycle design with few moving parts. It has a ceramic-coated seal. New impeller and volute designs result in fast self-priming, greater discharge pressures and high suction lift, according to the manufacturer. Self-cleaning construction reportedly permits handling of muddy and sandy water without clogging.

The SS3-1 is a slow speed, quiet model, ideal for use in city and suburban areas and for emergency night operations where noise is a problem. This pump can substain a head of 65 ft.

Where higher discharge pressures are required, the fast-priming, standard speed SS3-1R pump will fill the bill. It operates against a total head of 125 ft.

Third in the series is the high-volume pump SS3-1P, for jetting, fire fighting, irrigation and other jobs requiring high discharge pressures. Its builder says it can deliver 102 gpm at 60 psi. It can pump against a total head of 185 ft.

The pumps weigh 103 lb each. Manual throttle controls permit matching of pumping speeds to the job requirement for economical operation—high speed for quick de-watering, low speed for low-cost seepage control. Homelite, Port Chester, N. Y.

Power Saw Safety Guard Gives Protection, View

The new Brett-Guard see-through power saw guard is designed to give complete protection in the operation of any conventional table saw with blades from 6 to 16 in. A transparent plastic shield covers the saw, allowing full vision and complete accuracy in a wide range of operations. Brett-Guard Corp., 3611-14 Ave, Brooklyn 18, N. Y.

(*New Products continued p. 174*)

PEELLE DOORS

for Nuclear Applications

INDUSTRIAL RESEARCH LABORATORIES, INC., Plainsboro, New Jersey
ARCHITECTS: SKIDMORE, OWINGS & MERRILL • GENERAL CONTRACTORS: TURNER CONSTRUCTION CO.

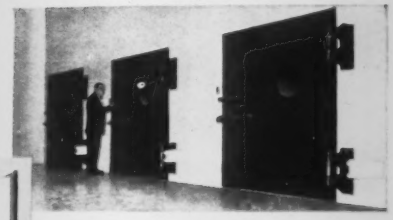
WHAT IT TAKES TO SUPPLY DOORS FOR NUCLEAR STRUCTURES

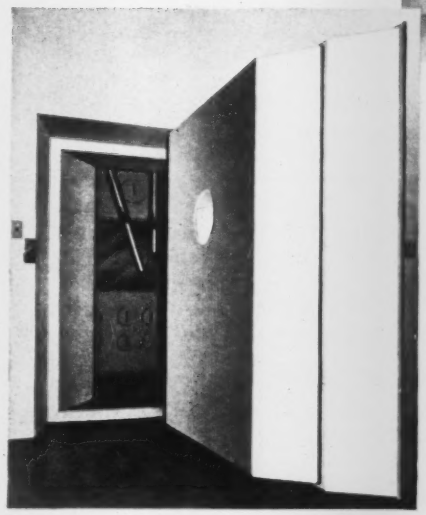
The engineering and functional aspects of doors used in hot cells, reactors, irradiation chambers and other nuclear structures pose many unusual problems that most door fabricators have never had to face.

Materials of great weight and density are used in nuclear shielding doors. Such doors may be made of lead, steel, concrete – sometimes heavy aggregate concrete – and often of a combination of these and other materials.

A great wealth of design and engineering experience, gained in furnishing doors for X-ray rooms, high frequency sound laboratories, jet engine test cells and for some of the most prominent nuclear laboratories in the world places The Peelle Company in a strong position to engineer, fabricate and install the various types of doors required for nuclear facilities.

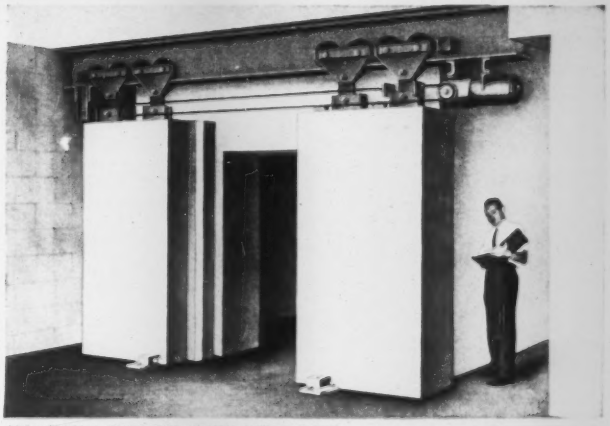
Write for color brochure containing photos and descriptions of an interesting variety of Peelle nuclear door installations.





HOT CELL DOORS AT PLAINSBORO, N. J.

The above battery of hot cell doors was photographed in the Industrial Reactor Laboratories for which Peelle engineered and installed eight nuclear shielding doors of various kinds. Photo at left shows one of these doors partially opened. Each of these doors weighs 26 tons and consists of a 3' thick steel shell filled with concrete and hung on massive steel hinges of superior design. A transfer hole in each door permits placing small objects in the cell while the door is closed.



ARCHITECTS & ENGINEERS: SHAW, METZ & DOLIO
CONSULTANTS: GENERAL NUCLEAR ENGINEERS, INC.

HOT LAB DOOR IN CARACAS, VENEZUELA

This Peelle center parting, horizontal sliding door in the I.V.I.C. Reactor Building is motorized. To provide extra hall space, the door pagels were constructed of machined solid steel slabs, measuring 16" in thickness and weighing 15 tons. The opening frame consists of heavy steel slabs to provide proper shielding and interlocking.

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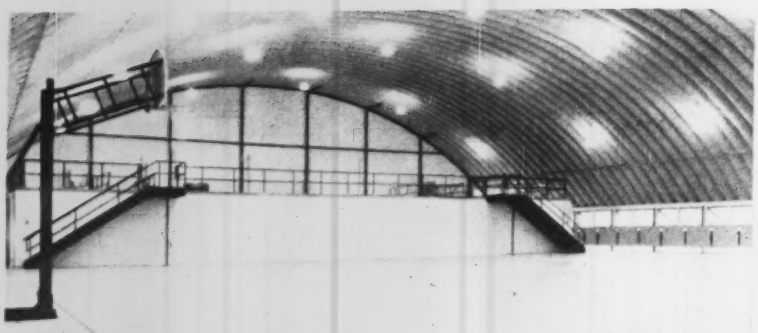

"Truss-Skin" Roof System — 100' x 128' — covers new Mullen High School gymnasium at Denver, Colorado

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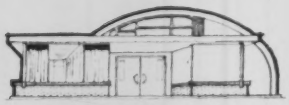

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Wonder Building structures and "Truss-Skin" Room Systems are available in clear-span widths up to 184 feet... lengths unlimited.

No compromise on quality, strength or functional versatility with Wonder Building structures. You meet every building requirement — with economy and speed of erection no other type building can equal. And, cut construction costs, on-the-job time 50%!

Wonder Building panels are heavy-gauge, zinc-coated steel — double-curved and corrugated to form a self-supporting structure. No posts, pillars or trusses! Interiors are completely unobstructed.

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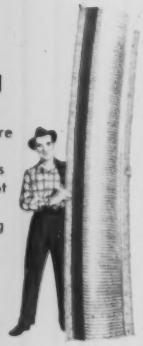
Patented Wonder Building panels are Coro-Crimped in small corrugations assemble in 2-foot corrugations. Strongest building design in the industry.



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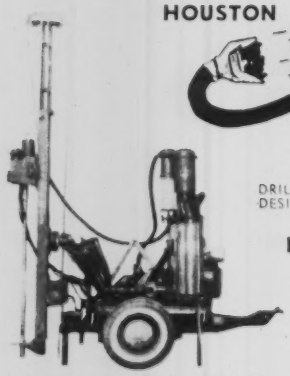

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NEW INJECTOR CORE RECOVERY THROUGH VISIOMATIC SAMPLE TUBES GIVES THE UTMOST IN SUBTERRANEAN TESTING

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DRILL SPEEDS UP TO 5' PER MINUTE — ESPECIALLY DESIGNED TO MEET ALL DRILLING REQUIREMENTS — DRILLS AT ANY ANGLE

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PHONE Fireside 6-1118 BOX 251 SANTA SUSANA, VENTURA COUNTY, CALIFORNIA

Slim Concrete Vibrator Reaches All Tough Spots

Workmen can now reach extremely confined sections and into awkward form angles to consolidate concrete among close-set prestressing cables and to improve concrete-to-steel bond.

The job's done with a thin vibrator attachment kown as the Sabre, which fits easily into adaptable Dart vibrator heads, says the manufacturer.

The Sabre blades are made of spring steel in 20 and 22-in. lengths. They fit the 1¼- and 1⅝-in. Dart Vibrator heads. Both these heads are now available with removable steel or rubber nose tips.

The 22-in. Sabre blade is 1¾ in. wide by 3/16 in. thick and fits the 7/8-in. head. The 20-in. blade is 1¼ in. wide and only ¼ in. thick and fits the 1⅛-in. head. DART MANUFACTURING & SALES CO., 1002 SOUTH JASON ST., DENVER 23, COLO.

Low Laying Return Unit Pumps Water To Boiler

A new pumping unit for gravity condensate return lines located at or below floor level has been designed and built for industrial, commercial, institutional and residential use. It receives the condensate by gravity flow and pumps it back to the boiler.

The unit (type RV heavy duty vertical underground condensation return) is said to be vapor tight. Its motor, ball thrust bearing and electrical control equipment are located on top of the receiving tank's cover.

Each pump-and-motor assembly and each float-switch assembly is equipped with an individual gasketed support plate so that either or both can be removed without disturbing the tank.

Receiving tanks of greater depth or greater diameter than standard can be made to order for installation where

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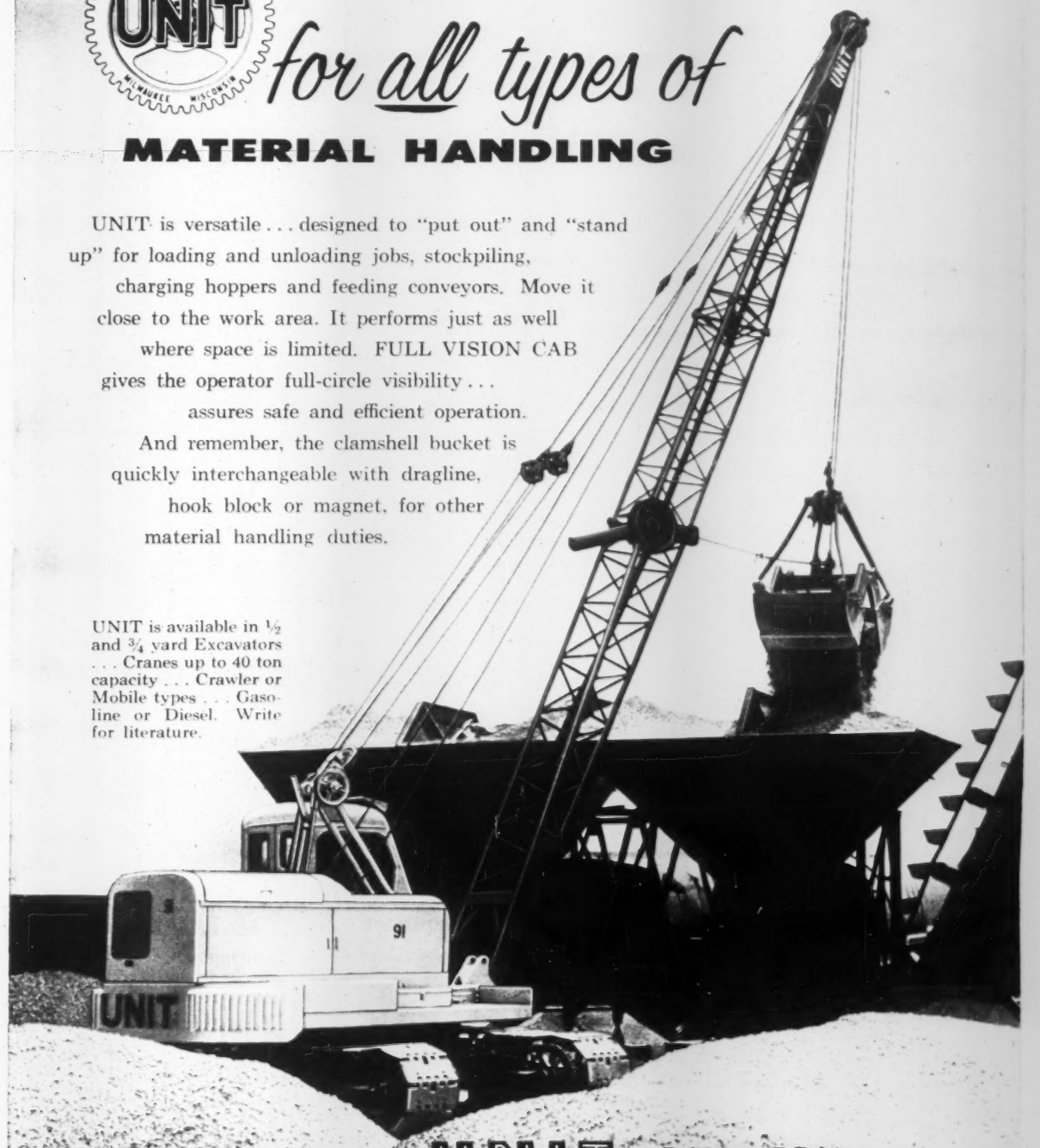

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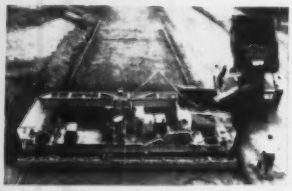

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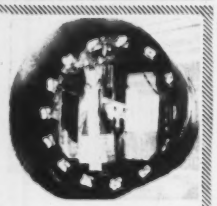

Bulletin No. 23 shows installations of Mayo shields, cylindrical air locks, lock doors, medical locks and tunnel cars. Send for your free copy.

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TUNNEL AND MINE EQUIPMENT
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unusual conditions require them. Federal Pump Corp., 1144 Utica Ave., Brooklyn 3, N. Y.

Ingersoll-Rand Produces Hard Rock Downhole Drill

A new downhole drill weighing 586 lb, including the bit, has been added to the Ingersoll-Rand line of drills.

This machine will put down 9-in. holes. It is intended for quarry and open-pit-mining operations—especially those having hard rock.

The air-powered hammer strikes the bit directly. No power is lost through rods or couplings.

Operating air exhausted through the drill continuously cleans cuttings from the hole. Cleaning air can also be directed through the machine when the drill is shut off.

The drill is now available in four sizes, and in bit diameters of $4\frac{3}{4}$ to 9 in. Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.

Electric Motor Drives Rotary Air Compressor

A line of rotary air compressors, believed to be the first electric-motor-driven, oil-cooled, two-stage units, is being made by Jaeger.

The new compressors feature General Electric induction motors that use the "jog" start method. A pneumatic timing relay jogs the motor into starting, eliminating need for a two-speed motor. Once started, the motor automatically picks up full speed in a few seconds.

The rotary compressors are said to contain 80% fewer moving parts than reciprocating compressors. They also weigh approximately 30% less. The new machines come in capacities of 130 to 625 cfm free air delivery. Jaeger Machine Co., Columbus, Ohio.

Dacron-Jacketed Fire Hose Made to Take a Beating

B. F. Goodrich Co. says its new fire hose will not burst, even if you soak it continuously in mud, subject it to air heavy with acid fumes and run it over with a truck.

The "Imperial" hose is made with an all-Dacron jacket. It can withstand surge pressures far beyond its initial 500 psi pressure test, the makers say. In laboratory abrasion tests, the new hose outlasts conventional single-jacket hoses 7 to 1 and rubber-covered hoses 3 to 1.

Imperial hose comes in 1-, $1\frac{1}{2}$-, 2- and $2\frac{1}{2}$-in. sizes. B. F. Goodrich Industrial Products Co., Akron, Ohio.

(New Products continued on page 178)

New Suspended Roof Ice Arena for 1960 Olympics

Architects: Carlett & Spackman, A.I.A., Kitchen & Hunt, A.I.A. • Structural Engineer: H. J. Brunnier • General Contractor: Diversified Builders • Steel Subcontractor: Pittsburgh-Des Moines Steel Company

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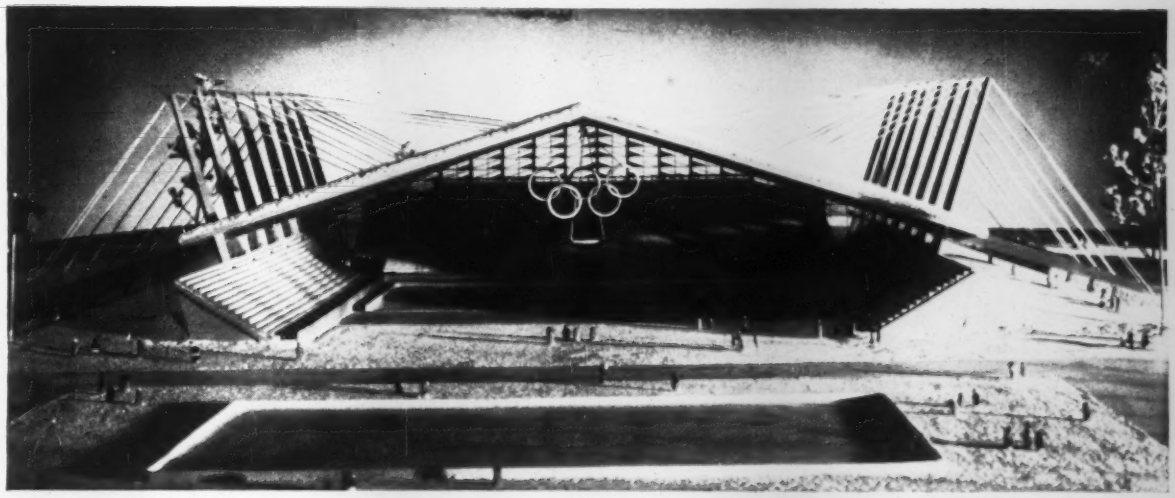

Architects' model of arena, showing dramatic open southern side.

In Squaw Valley, California, work is currently under way on the 1960 Winter Olympics Ice Arena. Unique in many respects, this soaring structure has a 300 ft clear span suspended roof, supported by 96 pieces of 2¼ in Roebling prestretched galvanized bridge strand. This strand was furnished socketed with no provision for take-up at the construction site. Each piece was fabricated to *exact* dimensions at the mill.

The main frame, providing the 300 ft clear span, consists of tapered steel columns, tapered steel box girders, and the inclined cable tension members, on 32 ft centers. Each half of this frame acts independently—in somewhat the same manner as a guy derrick, with the roof girder functioning as the boom, the column as the mast, and the inclined cables as the guys. Rolled steel beam purlins on 11 ft 4 in centers span the 32 ft between main frame girders and support the cellular steel deck roof.

Many factors had to be considered before design recommendations of any kind could be made; valley topography, snowfall, cost, specific needs of competing countries in the Olympics, etc. The suspended roof principle most fully met all requirements, both aesthetically and practically. Most interesting is the arena's open southern side which permits an unobstructed view of the valley with its speed skating rink and ski jumps. During activities in the arena, the open end will be partially closed by movable bleacher sections mounted on portable tracks.

The frequency with which architects, designers and engineers are utilizing the suspended roof principle for transportation terminals, gymnasia, convention halls, etc., is indicative of the beauty and economy of this method.

Roebling's interest in, and activities on behalf of, suspended roofs stems directly from its leadership in all forms of *steel in tension*. This leadership puts Roebling in the position of being able to share with you its findings, conclusions and theories covering all phases of suspension systems. We will be pleased, at any time, to discuss with you this knowledge. Just write Bridge Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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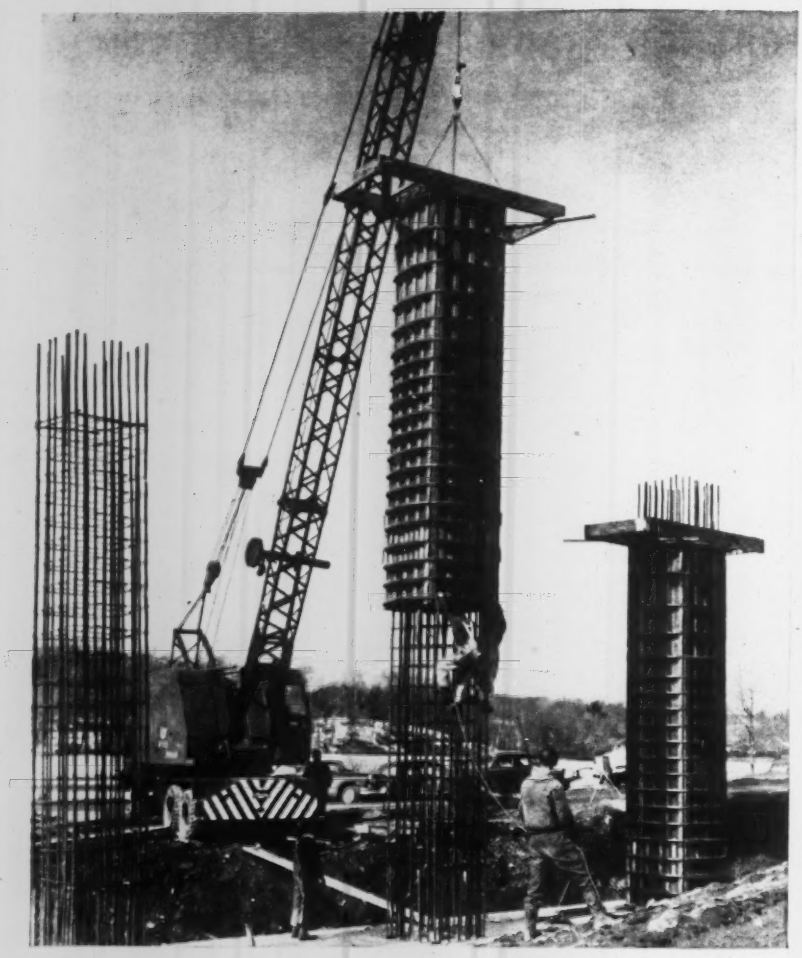

Signode way saves 1/3 of form tying costs

Contractors tying forms with steel strapping are saving as much as 33% in labor and material costs. Signode strapping eliminates form hardware...is easily cut to length from the coil...is tensioned and sealed with tools one man handles readily...is stripped and disposed of quickly when forms are removed ...produces clean work that practically eliminates finishing time. And it is useful for many bundling jobs on the construction site. The Signode man near you is ready to help you cut form tying costs on your next job. Call him today, or write Signode.

Concrete column calculator simplifies form design

Your guide to proven, economical designs for concrete column forms. Shows strap sizes and spacings to use on forms up to 65" diagonal or diameter...illustrates six tested truss designs. Offer limited to architects, contractors, engineers. Mailed promptly on receipt of $1.00.

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Second Scraper Size Added for Wheel Tractor

With the addition of a 24-cu-yd (struck capacity) scraper, two scrapers are now available for use with the Caterpillar DW20 wheel tractor. The new unit, No. 482, joins the 18-cu-yd 456 scraper to give a choice of machines to work with the DW20.

In general, the bigger 482 is recommended for economy when good loading conditions exist, haul road grades are at minimum and rolling resistance is low. The 456 is said to serve best on jobs where adverse grades and average-to-high resistance haul road conditions are met. Caterpillar Tractor Co., Peoria, Ill.

Briefs . . .

• **Anchor bolt cement**—Nacor, an extra-hard cement, is reported to set anchor bolts in 20 minutes. It consists of a light gray powder that mixes readily with water to form a semi-fluid, easily poured compound. National Asphalt Corp., Bulkley Building, Cleveland 15, Ohio.

• **Joint sealant** — Stonlast, a resilient sealing material, is reputed to be unaffected by extreme temperatures, expansion or contraction. This synthetic rubber compound can be used to seal cracks and joints in concrete, brick, metal, wood or other building materials. Stonhard Co., Inc., 1306 Spring Garden St., Philadelphia 23, Pa.

• **Interior walls**—Gridkore, a non-load-bearing wall system, is comprised of panels with a balsa grid core glued to ⅜ in. plasterboard sheets. The grid construction meets a 15-psf loading requirement. Balsa Ecuador Lumber Corp., 500 Fifth Ave., New York 36, N. Y.

• **Gas furnaces**—A new GH series of gas-fired, forced-air furnaces is designed for installation in residential utility areas. It features a steel heat exchanger, inner liner, floating blower, filter and gas-tight flue connection that moves freely with temperature changes. Lennox Industries, Inc., Marshalltown, Iowa.

• **Hardboard**—A new hardboard line features 20 basic hardboard products encompassing a total of 28 types and thicknesses. Included are smooth-both-sides, tempered, perforated and factory-finished panels. Textured boards are ribbed and corrugated panels. Georgia-Pacific Corp., Equitable Building, Portland 4, Ore.

NEW LE ROI NEWMATIC SHOCK ABSORBING BREAKERS

It's a Steal . . .

simply because it's hard on rock and easy on the operator — 65% easier! For operators who complain of pain caused by a back wrenchin', head joltin' breaker, the LB75 is the cure. Almost all of the severe pounding shock stays in the hand and forearm area where it can't drain off productivity.

Last year Le Roi introduced torsion rubber handles on sinkers. This outstanding acceptance on rock drills created a tremendous demand for this jolt-erasing feature on concrete breakers. So now this efficient handle is available on both medium and heavy units.

Heavy breakers now are handled like lighter units . . . with greater man/day output . . . happier workers. All this with no loss of impact at the point. Try the LB75 or LB92 at your Le Roi distributor today — or write Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wis.

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PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS

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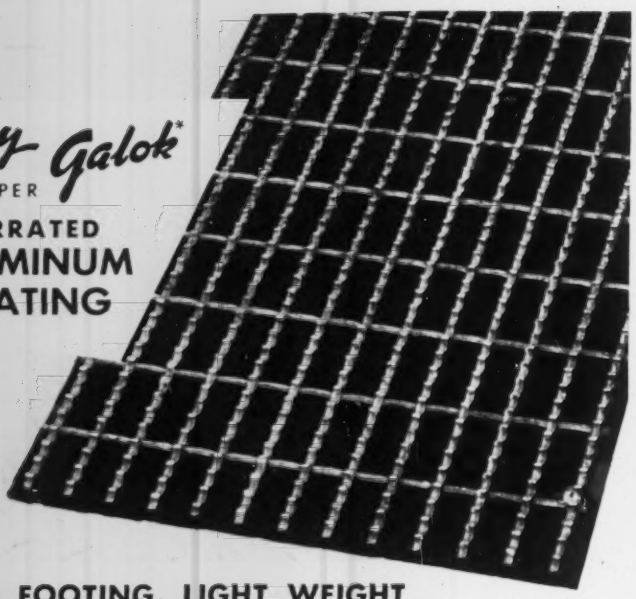

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Serrations scientifically designed to provide maximum positive footing and traction. High strength to weight ratio, minimum deflection, maximum safety, corrosion resistant. Bars cannot turn, twist, loosen or fall out. Write for complete details. E-29

*Patents Pending

Gary SUPER Galok aluminum grating also available with plain bars. Both the serrated and plain types in sizes for every need.

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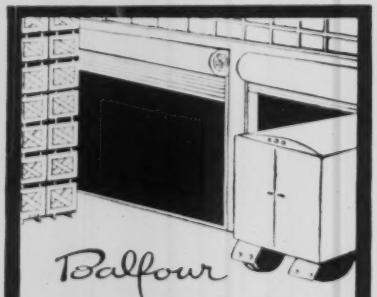

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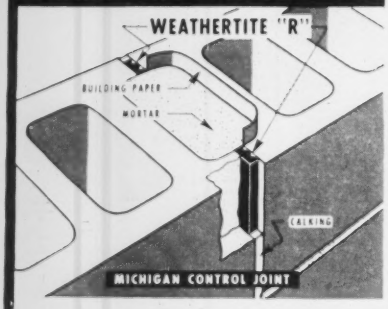
POSITIVE SEAL for CONTROL JOINTS



To safeguard against cracks in block-constructed masonry walls, always use an approved Control Joint. To prevent water seepage through these control joints, always use WEATHERTITE seals. Two types are available: WEATHERTITE "R" for Michigan Control Joints; WEATHERTITE "RB" for Besser Control Joints. WEATHERTITE is a specially shaped strip of expanded Polyvinyl-Chloride which provides a permanent and effective watertight seal in standard control joints. See Sweet's Architectural File, or write for information on WEATHERTITE; EVERLASTIC GASKETS for stone coping, sills, masonry wall panels, etc.; and WATERSTOPS for sealing construction joints between cast-in-place concrete members.

WILLIAMS
EQUIPMENT and SUPPLY CO.
456 W. Eight Mile Rd., Hazel Park, Mich.

Publications

Scaffolding handbook—Text, diagrams and photos outline scaffolding design for numerous construction applications. 44-page handbook. UNIVERSAL MFG. CO., ZELIENOPLE, PA.

Electric vibrators—Specifications, descriptions and application of electromagnetic vibrator line to bins, forms and containers. 12-page catalog. SYNTRON CO., HOMER CITY, PA.

Cold rotary benders—Wide range of benders from small to huge for reinforcement tube and pipe bending. 32-page booklet. WALLACE SUPPLIES MFG. CO., 1300 DIVERSEY PARKWAY, CHICAGO 14, ILL.

Pneumatic hoist—Fact sheet gives capacities and mount types with information on air-operated hoists. Bulletin 860. DETROIT HOIST & MACHINE CO., 8201 MORROW ST., DETROIT 11, MICH.

Hard hats—Two types of laminated-plastic hard hats offered in nine colors for personnel identification. 4-page bulletin 0601-4. MINE SAFETY APPLIANCES CO., PITTSBURGH 8, PA.

Space heaters—Specifications and descriptions of thermostat-controlled portable space heaters. 4-page catalog 5815. STOW MFG. CO., 443 STATE ST., BINGHAMTON, N. Y.

Protected motors—Description, specifications and details of electric motors designed for outdoor operation under extreme weather conditions. 6-page bulletin 2550. THE LOUIS ALLIS CO., 427 E. STEWART ST., MILWAUKEE 1, WIS.

Flexible metal connectors—Full line of dry and wet hose connections for heating and gas systems. 16-page catalog 658. COBRA METAL HOSE, 5059 S. KEDZIE AVE., CHICAGO 32, ILL.

Bituminous paver—An illustrated description of Pioneer's 1959 model bituminous paver, including complete specifications and data. 16-page booklet. PIONEER ENGINEERING DIV., POOR & CO., INC., MINNEAPOLIS, MINN.

Wright iron pipe—The booklet "34-D Wrought Iron for Building Drainage Systems" provides architects, engineers, owners, contractors and maintenance supervisors with a discussion on piping for soil, waste, vent and downspout applications.

Included are descriptions of the corrosive conditions encountered in drainage services, comparative service

This scraper is one of a fleet operated by Ball and Simpson, contractors of Berkeley, California. The equipment works 16 hours a day hauling 25-ton loads of dirt and rock for a new superhighway. The company keeps this project on schedule by using B.F.Goodrich Rock Service tires. The report: even under tire-killing work conditions, Rock Service tires cut delays to a minimum—give as many as 2,000 hours' service before retreading.

B.F.Goodrich

Rock Service prevents unnecessary tire failures!

THE new B.F.Goodrich Rock Service—unlike an ordinary tire—is built to its inflated shape. This FLEX-RITE construction permits *uniform* flexing—no localized stresses that often cause unnecessary tire failures!

Look at the husky double chevron tread. The cleats bite in to give maximum traction and skid resistance in forward or reverse. Under the tread is the B.F.Goodrich FLEX-RITE NYLON cord body. It withstands double the impact of ordinary materials, resists heat blowouts and flex breaks. The B.F.Goodrich FLEX-RITE NYLON body outwears even the extra-thick Rock Service tread, can be retreaded over and over! No wonder the B.F.Goodrich Rock Service tire gives longer service in mine, quarry or dirt-moving jobs!

Western Contracting Corp. operates 2,000 vehicles to build highways, dams and air bases all over the country. Here the job is earth moving for a new runway at Wright-Patterson Air Force Base, Fairborn, Ohio. B.F.Goodrich Rock Service tires have substantially increased hours of service and substantially reduced delays due to tire failure (saving between $300 and $600 per hour, the company reports).

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Chicago, Illinois	ES. 8-8800	Kansas City, Kansas	MA. 1-4400	St. Louis, Missouri	PR. 3-2600
Cincinnati, Ohio	BR. 1-7800	Los Angeles, California	RA. 3-6692	Salt Lake City, Utah	DA. 2-2405
Cleveland, Ohio	PR. 1-0827	Memphis, Tennessee	WH. 8-6761	San Antonio, Texas	CA. 7-7543
Columbus, Ohio	AM. 8-8631	Milwaukee, Wisconsin	DI. 4-5104	San Francisco, California	AT. 2-9620
Dallas, Texas	RI. 1-5601	Minneapolis, Minnesota	LI. 5-2521	Seattle, Washington	MU. 2-4300
Denver, Colorado	TA. 5-1267	Newark, New Jersey	MA. 3-3317	Wichita, Kansas	HO. 4-6389
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Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment. *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

Enter the B.F.Goodrich Truck Tire Mileage Contest. You can win a Thunderbird, or Corvette, or one of 510 other prizes. See your B.F.Goodrich dealer today for entry blanks.

B.F.Goodrich *truck tires*

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records and typical installation and performance tables.

Piping economy is discussed and cost comparison between low-maintenance and low-initial-cost materials are graphically illustrated 64 pages. A. M. Byers Co., P. O. Box 1076, Pittsburgh 30, Pa.

Aluminum in power plants—An illustrated booklet, "More Kilowatts Per Dollar," covers applications under the general headings of architectural, electrical, and mechanical, giving a bibliography of available literature for each.

Discussed are 60 types of applications based on existing installations where aluminum means initial, installed, or service-life savings to the user. Applications included range from long-accepted bus conductors, siding, and ducts, to such newer uses as switchyard structures, die-cast stair treads, and tubes for surface condensers. 34 pages. Aluminum Company of America, 756 Alcoa Building, Pittsburgh 19, Pa.

Earthmovers—An entire line of earthmoving equipment is described. Condensed specifications included on rear dumps, bottom dumps, scrapers and crawler tractors. Brochure 326 R. Euclid Div., General Motors Corp., Cleveland 17, Ohio.

Distributor—Three different operations performed by the Model RMT, a tow-type bituminous distributor are described. 4-page bulletin 568 B. Roscoe Mfg. Co., 3118 Snelling Ave., Minneapolis 6, Minn.

L-head engines—Five revised 2-page bulletins describe six-cylinder, L-head gasoline engines. Bulletins E-116, 118, 137, 139, 163. Hercules Motors Corp., Canton, Ohio.

Pipeline jobs—"On Three Pipeline Jobs with Cat Equipment" shows how pipeliners apply machines to handle many jobs. 8-page booklet DE 836. Caterpillar Tractor Co., Peoria, Ill.

Hoists—Three catalog specifications sheets cover telescopic hoists for truck dump bodies and for trailer dump bodies. Applications and hoist ratings are included. Daybrook Hydraulic Div., Young Spring & Wire Corp., Bowling Green, Ohio.

Gang Vibration—Bulletin No. 5820 gives information on Stow electric vibrator, mounting frames, brackets and generators use for deep slab internal gang vibration. Stow Manufacturing Co. 19 Shear St., Binghamton, New York.

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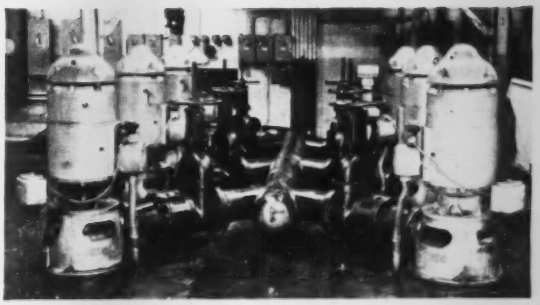

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VERTICALS ARE VERSATILE, TOO: Primary water supply, sumps, pipe lines, refineries, condenser lines and boosters, circulating, dewatering, volatile fluids, cooling towers.

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Johnston Pump Co.
Bin K, Pasadena, Calif.

Send complete information on industrial applications.

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The Austin Co. Gets New Research Chief

A. T. Waidelich is the new director of engineering and research and vice president of The Austin Co., Cleveland, Ohio. He succeeds J. K. Gannett, who is known for his pioneering work in industrial and commercial building design.

Mr. Gannett developed the concept of controlled-conditions factories in the 1930's. This type of construction was first used for a windowless plant of the Simonds Saw & Steel Co., Fitchburg, Mass. The interior temperature, humidity, lighting and acoustics for that plant were completely controlled for production efficiency.

A 1910 civil engineering graduate of the University of Michigan, Mr. Gannett joined The Austin Co. in 1915 as assistant chief engineer. He took charge of the company's foreign operations in 1918. From 1928 to 1944 he served as vice president in charge of eastern U. S. operations. Then, he was elected a director and vice president, heading up engineering and research.

J. K. Gannett retires

A. T. Waidelich takes over

His successor is a civil engineering graduate of Drexel Institute of Technology, with a master's degree from Massachusetts Institute of Technology. He joined the company in 1936 as a structural designer. As assistant director of research from 1941 to 1949, Mr. Waidelich played a leading role in the development of H-section welded trusses. Since 1949, he had been manager of Austin's research division.

Coldwell of Ford, Bacon & Davis Retires

Charles C. Whittelsey, president of Ford, Bacon & Davis, Inc., engineer and business consultant of New York City, was elected chairman of the board succeeding Everett S. Coldwell, who has retired after 33 years of service with the firm. Mr. Whittelsey will continue as president and chief executive officer.

Mr. Whittelsey joined the firm on a construction job in 1925. He remained in the construction end of the business until 1937, when he was assigned to rate cases, valuations and other phases of the company's work. He was elected a vice president and director of Ford, Bacon & Davis Construction Corp. in 1944.

Two years later he became a director of the parent company. In 1948 he was elected a vice president of the parent company and executive vice president of the construction affiliate. He succeeded Mr. Coldwell as president in 1957.

Mr. Whittelsey has been in charge of engineering and construction on many of the firm's contracts for large-scale projects, including chemical plants, pipeline systems for natural gas and petroleum, and various specialized manufacturing and industrial facilities. He supervised the engineering and building of the nation's first synthetic rubber plant at Institute, W. Va., in 1942.

Everett S. Coldwell retires

Charles C. Whittelsey elected

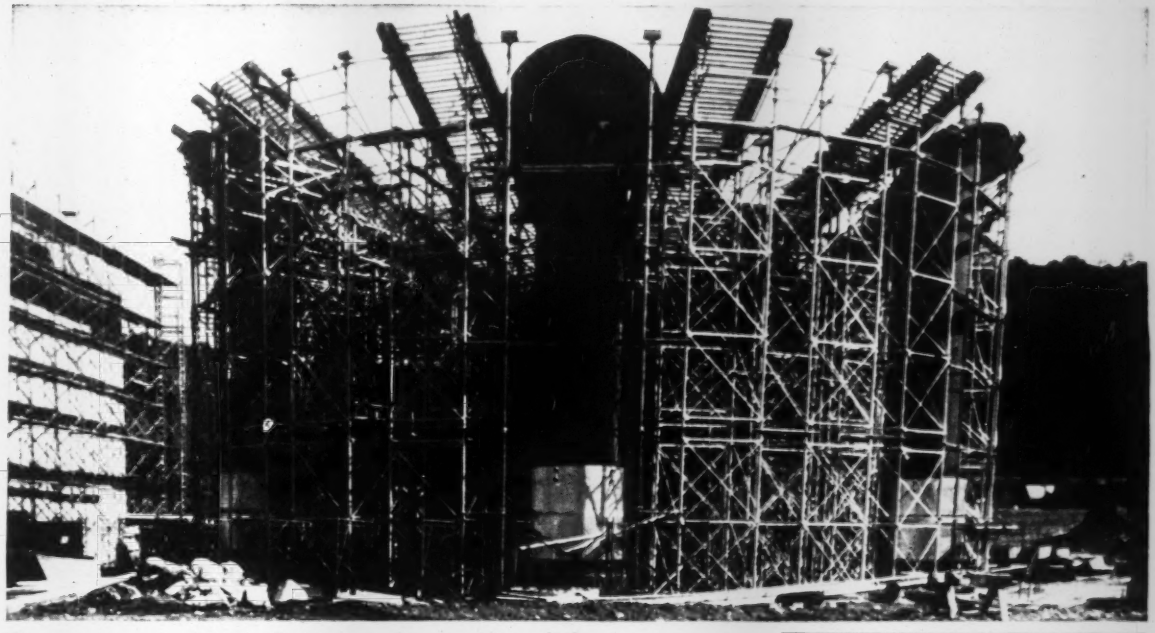
He is a graduate of Washington University, St. Louis, Mo., and the Missouri School of Mines.

Mr. Coldwell, a 1915 graduate of Massachusetts Institute of Technology, has graduate degrees from MIT and Harvard. Before joining Ford, Bacon & Davis in 1926, he had been with the old Columbia Phonograph Co., Inc., Bridgeport, Conn., for six years.

He was elected a vice president of Ford, Bacon & Davis in 1941, a director in 1942 and president seven years later.

During his stay with the 65-year-old firm, Mr. Coldwell has specialized in management problems involving basic policy, future outlook, organization, op

Shoring Methods . . . by Patent Scaffolding Co.



Extreme Load Bearing Problem Solved With PS Co. Shoring

at Yankee Atomic Electric

JOB LOCATION—New 134,000 kilowatt atomic energy producing electric power plant for Yankee Atomic Electric Company, Rowe, Mass. Cost estimated at $50,000,000. Scheduled for completion in late-1960. Now in construction. See artist's sketch of finished plant.

ENGINEERS AND DESIGNERS—Stone & Webster Engineering Corporation and Westinghouse Electric Corporation.

CONSTRUCTORS—Stone & Webster Engineering Corporation.

PROBLEM—What type of shoring to use to support at considerable height above grade a superstructure forming the base and shield around atomic reactor section of the plant—see elevation view diagram.

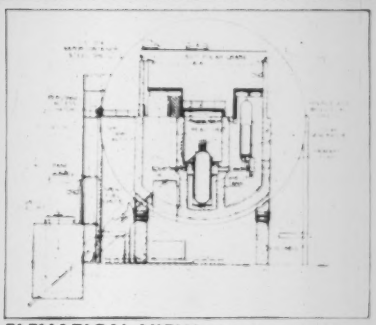
Factors to be considered were these: 1—The outer concrete shield for the reactor section, measuring 82'6" in diameter, consists of a conical shaped bottom slab averaging 5' thick; 2—This slab is in turn supported by the circular inner and outer walls above the slab. These walls are 5' wide by an average height of 16' above the slab; 3—The massive circular walls are to be poured monolithically with the slab, since they act as beams which, after developing sufficient strength, support the conical slab between the columns.

SOLUTION—PS Co., working closely with Stone and Webster, devised the load bearing engineering factors to be met by the shoring equipment. These included —shoring must be erected to 30'-high at the low point and 50'-high at the high point. Shoring must be spaced to carry a maximum load of 21-tons on each leg under the ring walls, 15-tons on each leg under the conical base.

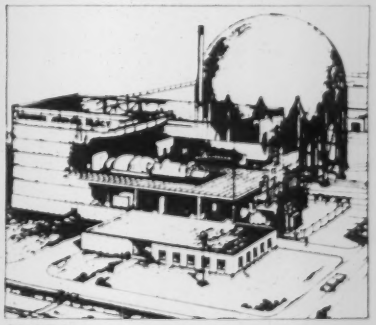
From the many types of PS Co. equipment available, "Extra Heavy Duty Shoring" components are specified by both companies' engineers as the correct supporting medium for the job. The load bearing capacity of this equipment meets the requirements. An engineering layout, supplied by PS Co., provides exact detailed plans for correct placement of shoring legs and erection of the equipment. The photo shows how the Shoring is erected, ready for the forming lumber. Exact height adjustment is achieved by the use of 25-ton capacity screw jacks.

As proved on this unusually heavy supporting problem—there is a type of PS Co. Shoring equipment available to do practically any kind of shoring, regardless of the size or weight of the job.

NOTE—Additional PS Co. equipment to be used is 2,000 frames of "Trouble Saver" 5'-wide Sectional Steel Scaffolding to provide platforms for exterior work around the periphery of the vapor shield and "Trouble Saver" 2'-wide Ladder Scaffolds to support heavy concrete beams of other structures.



ELEVATION VIEW showing the concrete area which is being supported by the "Trouble Saver"® Shoring.



SKETCH of the 134,000 kilowatt plant, which will cost about $50,000,000 scheduled for late 1960 operation.

FOR GREATER SAFETY...EFFICIENCY...ECONOMY

GOLD MEDAL LADDER SCAFFOLDING

THE PATENT SCAFFOLDING CO., Inc.

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Complete scaffolding equipment and engineering service offered through nation-wide sales offices or representatives. Look under Patent Scaffolding in the Yellow Pages for your nearest source.

SALES **RENTALS**

DEMING VERTICAL TURBINE PUMPS

ADJUSTABLE IMPELLERS

Semi-enclosed impellers are easily adjustable for maximum performance under varying conditions.

Just one of many
Deming features that mean longer life and lower operating costs

Ask for a recommendation on your next project.

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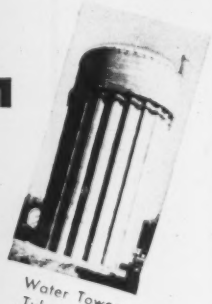
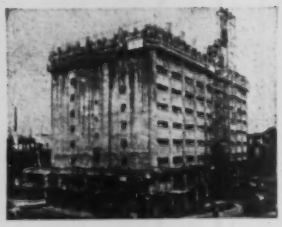


Water Tower, Tyler, Texas

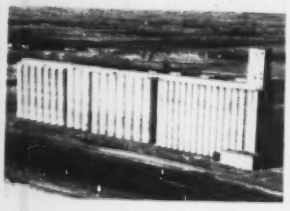
All inclusive compact jacking unit

Apt. House, Memphis, Tenn.



You build the form. "Concretor" equipment raises it automatically. Adaptable to all types of vertical construction. On-the-job engineers available. Send for job studies.

Elevator, Fremont, Neb.



B. M. HEEDE, INC., 30-01 37th Ave., Long Island City 1, N. Y.

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crating efficiency and budgets and costs.

He has been in charge of engineering work and studies of various kinds for about 50 major U.S. corporations in every section of the country and in nearly every field of industry.

He directed operations of the Arkansas Ordnance Plant at Jacksonville, Ark., during World War II, and also directed the construction and operation phases of the atomic plant at Oak Ridge, on which the firm had a U. S. Government management contract. In 1940, he headed a complete survey for the Department of Water & Power of the City of Los Angeles.

Frank Sherman Returns to Foreign Construction Work

After a relatively brief sojourn on a strictly U. S. job, Frank R. Sherman is returning to foreign construction.

He will be operations manager of the international division of Daniel, Mann, Johnson & Mendenhall, Inc., Los Angeles architectural and engineering firm. Most recently he has been construction engineer for Chicago's Metropolitan Fair and Exposition Authority.

Mr. Sherman's new responsibilites will place him in charge of such current DMJM projects as: consulting engineering for the Third Air Force installations in the United Kingdom; a $24 million power plant on Guam for the Navy; the design of what is said to be the world's largest underwater aqueduct for the government of Venezuela; and a water exploration program for the government of Thailand.

From 1954 to 1957, Mr. Sherman was deputy project engineer for the architect-engineer combine in charge of the Air Force and Navy base program in Spain. Previous to that he was general manager of Okinawa operations for Skidmore, Owings & Merrill and project manager on airbases in the Azores.

(*Men and Jobs continued on page 189*)

Time-light camera shows!

Which shovel-crane produces more?

Follow the light lines. They show the "long reach" moves an operator makes with conventional controls to complete a hoe cycle, then shift from swing to travel, steer right and left and shift back from travel to swing. Such "arm's-length" work with slow mechanical or booster systems adds seconds to every move, drains operator strength, cuts end-of-the-shift output.

No reaching, no yanking . . . just easy, "keyboard" operation with Speed-o-Matic controls and Independent-Swing-and-Travel when performing the same operations as the hoe with conventional controls. Short-throw levers speed cycles, up output, conserve operator strength. Ask the man who has worked both controls. He'll pick Speed-o-Matic every time!

Speed-o-Matic power hydraulic controls increase output by decreasing cycle time and reducing operator fatigue

Pushing a shovel-crane at its highest limit all shift long is easy with Speed-o-Matic power-hydraulic controls.

And Speed-o-Matic—standard on all Link-Belt Speeder shovel-cranes—is the original fingertip, flick-of-the-wrist system.

Hydraulic pressure assures the same fast, smooth response *all day*, without adjustments . . . and with perfect feel of the load at every lever position.

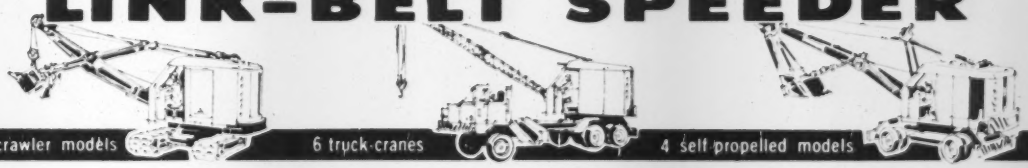
And Speed-o-Matic power-hydraulic controls are only one of the many Link-Belt Speeder advantages. Others include—

- GREATER USABLE HORSEPOWER
- FULL-FUNCTION DESIGN tailors the machine to the job . . . permits more standard and optional features such as Independent-Swing-and-Travel.
- BONUS CRANE CAPACITY when using long booms at extended radii.

For complete details on why your best shovel-crane investment is a Link-Belt Speeder, contact your distributor or write LINK-BELT SPEEDER CORP., Dept. ENR-258, Cedar Rapids, Iowa, for book 2553.

14,795

LINK-BELT SPEEDER



18 crawler models | 6 truck-cranes | 4 self-propelled models

It's time to compare . . . with a Link-Belt Speeder

LONGEST PRESTRESSED CONCRETE SPAN IN U.S.—

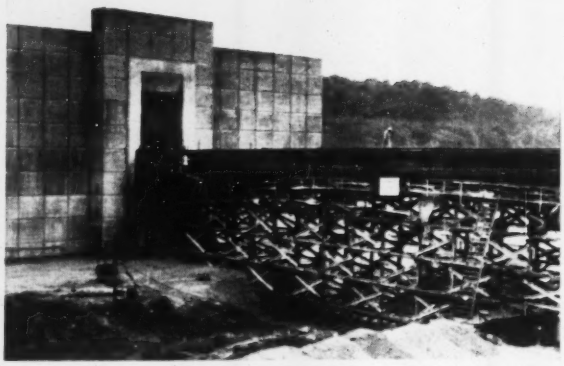
BUILT WITH LEHIGH CEMENT

Engineers: Corps of Engineers, U. S. Army, Washington District

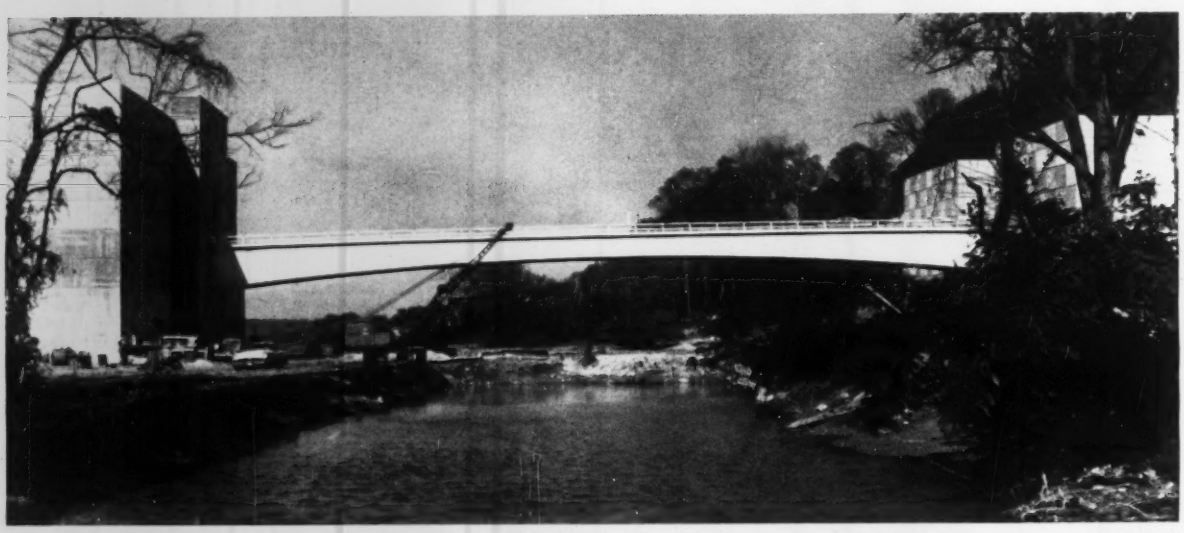
Architects-Engineers: Black and Veatch, Kansas City, Mo.

General Contractor: James McHugh Construction Co., Chicago, Ill.

Sub-Contractor For Prestressing: Prestressing, Incorporated, San Antonio, Texas



An extensive false-work system carried formwork for this record *single span* hollow box girder. Huge 700-ton concrete counterweights, which balance the dead load of the bridge, are housed in the two station buildings.



This beautiful *single span* bridge is only 7′ deep at center and 12′ deep at the ends. The roadway on the bridge is 16′ wide. Future plans call for a dual-lane highway running along the C. & O. canal.

• Arching 216′ across the C. & O. canal paralleling the Potomac River at Little Falls, Md., this cast-in-place, post-tensioned Washington Aqueduct bridge joins a riverside pumping station with an electrical sub-station and forms part of the new $6 million water supply project for Washington, D. C.

With Lehigh Cement used throughout, the prestressed concrete span supplants the 160′ center span of the Walnut Lane Bridge in Philadelphia (another "all-Lehigh Cement" project) as the longest in the country.

Once again, in a record-breaking job demanding the best in men and materials, Lehigh Cement has proved its value.

Note attractive architectural treatment of concrete surfaces of the sub-station. Over 60,000 barrels of Lehigh Cement were used in the entire project which includes the bridge, buildings, a dam and an outlet tunnel.

LEHIGH PORTLAND CEMENT COMPANY

ALLENTOWN, PA.

A. W. Simonds Retires. Authority on Grouting

A. Warren Simonds, authority on grouting techniques for dams, has retired.

As head of the foundations and structural behavior section in the Bureau of Reclamation engineering office in Denver, Mr. Simonds participated in the design of numerous structures for water-resources development throughout the 17 western states.

He pioneered in and directed the testing of structural models of Hoover, Grand Coulee, Norris and Gibson Dams among others, during the early 1930's. Techniques he developed in structural model construction are now being applied to model tests of Glen Canyon Dam.

He has served as an engineering adviser to the governments of Japan, Formosa, New Zealand, Australia, Ethiopia, Costa Rica and Lebanon.

Mr. Simonds graduated with a Bachelor of Science degree from the University of Texas in 1921 and in 1933 received a Master of Science degree from the University of Colorado. He was a member of the faculty at Texas A and M College before joining the Bureau.

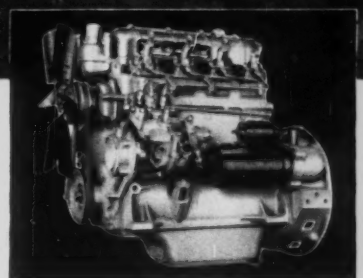
Mr. Simonds wrote numerous technical papers on foundation behavior and grouting. In 1954 he won the American Society of Civil Engineers' Thomas Fitch Rowland Prize.

Careers

Business

Houghton R. Hallock has joined the consulting engineering firm of Gannett, Fleming, Corddry and Carpenter, Inc., Harrisburg, Pa., as director of the gen-

START *at the top* AND WORK DOWN



Waukesha Model 180-DLC Diesel—144 cubic inch., four-cylinder, 3½-in. bore x 3¾-in. stroke, counterbalanced crankshaft.

WAUKESHA *Diesel*

powers this

PAYLOADER®

When demolishing a multi-story, block long storage warehouse in New York City, the Cleveland Wrecking Company's *Payloaders* were taken to the top floor. From there they bulldozed, loaded and dumped all kinds of brick and rubble through floor hatchways down into the basement for later removal.

Pictured on the job is front-wheel drive, rear-wheel steer Model HA *Payloader* powered with a Model 180-DLC Waukesha Diesel—an engine with the lively acceleration and quick pick-up that gives tractor-shovel speed, flexibility, and all-around versatility, particularly in shorter turning. Model HA *Payloader* lifts 3000 lb. and carries 2000 lb. Its powerful 40-degree bucket tip-back has 3100 lb. of breakout force for prying out loads of heavy and lumpy materials. Its 180-DLC Waukesha Diesel is shown here; but it is also available with a Waukesha Model FC Gasoline Engine. Get Engine Bulletins 1626 and 846.

408

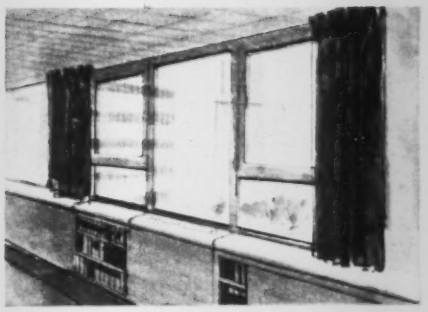
WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK TULSA LOS ANGELES

Factories—Waukesha, Wisconsin, and Clinton, Iowa

Installed under single responsibility . . . all in one unified system—LUPTON curtain walls, comfort-conditioning units, shelves, and cabinets.

LUPTON makes individually-regulated comfort conditioning an integral part of a curtain-wall system



On the inside, a sill of normal depth tops the compact comfort-conditioning unit as well as its adjacent cabinets—presenting an extremely attractive decor.

Reduces installation costs 40-60% from previous air-conditioning methods for all true "perimeter" buildings

Now that comfort conditioning has been combined with LUPTON curtain-wall systems, you can forget about unsightly, expensive cooling towers . . . bulky, space-eating ductwork and plumbing connections. The only apparatus necessary for LUPTON comfort conditioning is electrical connections.

Skilled LUPTON crews will assemble the units . . . giving you one-source responsibility for outside wall and inside cabinets, shelves, and comfort-conditioning equipment. This eliminates the problems of specifying and coordinating these various parts. The curtain wall and comfort-conditioning system are installed together to form a complete exterior-interior wall.

Two interchangeable units

LUPTON gives you two comfort-conditioning units to work with: heavy-duty for areas with a particularly heavy cooling load, and lighter-duty for average loads. Both units have the same dimensions, and can be interchanged as loads increase or decrease. All components are selected for low noise level and durability. They're precision-balanced for maximum over-all efficiency.

LUPTON comfort conditioning is designed and installed to give room-by-room control of air-conditioning, filtration, ventilation, and exhaust. These advantages, plus the space it saves, are among comfort conditioning's major rental features for building owners.

Another is lower air-conditioning costs. Because temperature is regulated from each unit by the occupant of each room, there's no costly over-air-conditioning. Individual comfort control allows complete variation from room to room.

System widely flexible

With advance planning, your LUPTON comfort-conditioning system is simple to re-arrange. You can make changes in the number and location of comfort-conditioning units with ease and speed . . . at relatively small cost.

Just treat all exterior panels in a uniform manner to provide for comfort conditioning. Install as many LUPTON Comfort-Conditioning Units as you need at first. Combine them in each office with shelving, bookcases, or storage cabinets. Then, you can replace these latter units, when required, with additional LUPTON comfort conditioners.

You can also conceal or expose the air-circulating function of the panels. This feature allows you endless opportunities for variations in spandrel proportions and surface treatment.

Write today for more information about Comfort Conditioning. Explore the almost unlimited possibilities of LUPTON's newest advance in aluminum curtain-wall design and function.

On the outside, nothing protrudes. Wide separation between air intake and discharge gives faster, more efficient dissipation of heated air, prevents it from re-circulating.

One panel controls temperature, fan, and exhaust for smoke or odor removal . . . allows each occupant individually to regulate comfort conditioning for his office.

Through advance planning, you can readily expand or decrease comfort-conditioning capacity, interchange units quickly, easily, and at small cost.

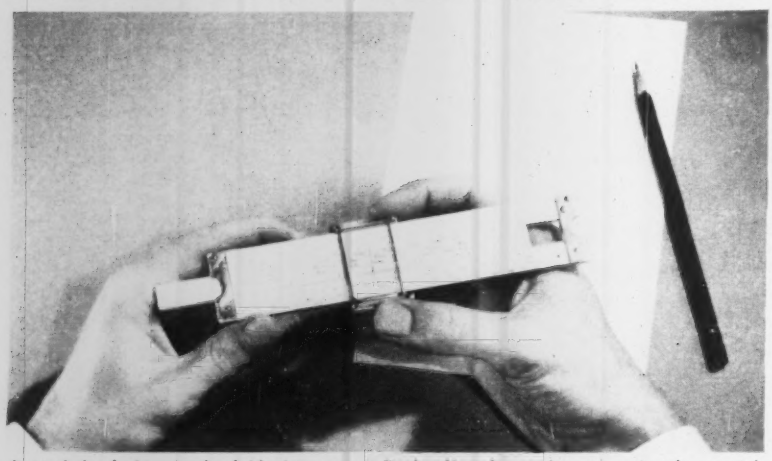
LUPTON®

ALUMINUM CURTAIN WALLS AND WINDOWS

MICHAEL FLYNN MANUFACTURING COMPANY

Main Office and Plant: 700 E. Godfrey Ave., Philadelphia 24, Pa. New York, N. Y.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Los Angeles, Calif.; Stockton, Calif.; Dallas, Texas. Representatives in other principal cities.

DRAFTING TRENDS



Behind the desk or in the field, the compact Pocket Versalog is the answer for those quick calculations. Weighing only 1½ ounces and having 23 versatile scales, the Pocket Versalog, is designed for professional people in all fields of engineering.

Pocket Versalog changes concept of pocket slide rules

Today's engineer must have a slide rule of professional quality . . . with a full range of scales necessary for rapid calculation . . . to solve a variety of problems, accurately and easily.

That's a lot to expect of a standard sized slide rule. It is even more to demand of a pocket rule . . . and, of course, that is the primary reason why 5" slide rules are not used extensively by many engineers, despite the convenience they seem to offer.

A new concept of pocket rules is likely to change this viewpoint, due to the recent introduction of the Pocket Versalog. Here is a slide rule that weighs a mere 1½ ounces, is only 6¾" long, yet contains 23 versatile scales for rapid, surprisingly accurate answers to problems in every field of engineering.

The Pocket Versalog accurately duplicates the famed 10" Post Versalog, with very feature that has made it by far the most universally approved slide rule on engineering campuses today. For example, the same R_1 and R_2 scales permit square root computations with far greater accuracy than A and B scales . . . four log log and four reciprocal log log scales give tremendous versatility . . . and the same new end zone designations of log and log log reciprocal scales speed calculations.

Other features include exclusive color coding of the trigonometric scales which simplifies their use in many ways. In addition, the appearance of the C and D scales on *both* sides of the rule permits easier solutions to many problems.

Built to last

Laminated bamboo is the Pocket Versalog's secret to long life. Only bamboo gives you so many advantages: Protection against warpage, since it resists humidity to a high degree. Natural sealed-in silica, which actually makes the rule function more smoothly as the years go by *without ever requiring lubricants*. A slide that moves perfectly, never too loose nor too tight.

The precision graduations cut into the white celluloid face remain accurate and readily visible during the entire lifetime of the rule, thanks to the extremely accurate engine-dividing of each graduation. Lines are razor sharp . . . they will not smear, fade nor vary.

Convenient to carry in office or on the job, Post's Pocket Versalog is furnished in a handsome leather case with pocket clip. It is lighter, smaller, more compact than any other advanced slide rule on the market.

For more information on the Pocket Versalog, see your local POST blueprinter or write today to Frederick Post Company, 3658 North Avondale Avenue, Chicago 18, Illinois.

POST

SENSITIZED PAPERS & CLOTHS • TRACING & DRAWING MEDIUMS • DRAWING INSTRUMENTS & SLIDE RULES
ENGINEERING EQUIPMENT & DRAFTING SUPPLIES • FIELD EQUIPMENT & DRAFTING FURNITURE

eral engineering division. He recently resigned as executive vice president of the Texas Atomic Energy Research Foundation. Previously he had retired as a colonel from the Corps of Engineers, U.S. Army, after 20 years service.

Richard C. Gerke joins Herrick Iron Works of Hayward, Calif., as assistant director of sales.

H. Hudson Myers, Jr., has been named an associate in the Baltimore consulting firm Whitman, Requardt and Associates.

Associations

Bernard L. Werner, water engineer for the city of Baltimore, has been elected president of the Maryland section of the American Society of Civil Engineers.

Public Works

William S. Chapin has been made general manager and chief engineer of the Power Authority of the State of New York. He succeeds J. Burch McMorran, who has been appointed New York State's superintendent of public works. Mr. Chapin was formerly general manager and secretary of the power authority.

Elmore Martin, member of the Middletown, Ohio, engineering department since 1955, has been appointed city engineer for Hamilton, Ohio. He succeeds **Fred Hardy,** who resigned to become director of public works in Zanesville, Ohio.

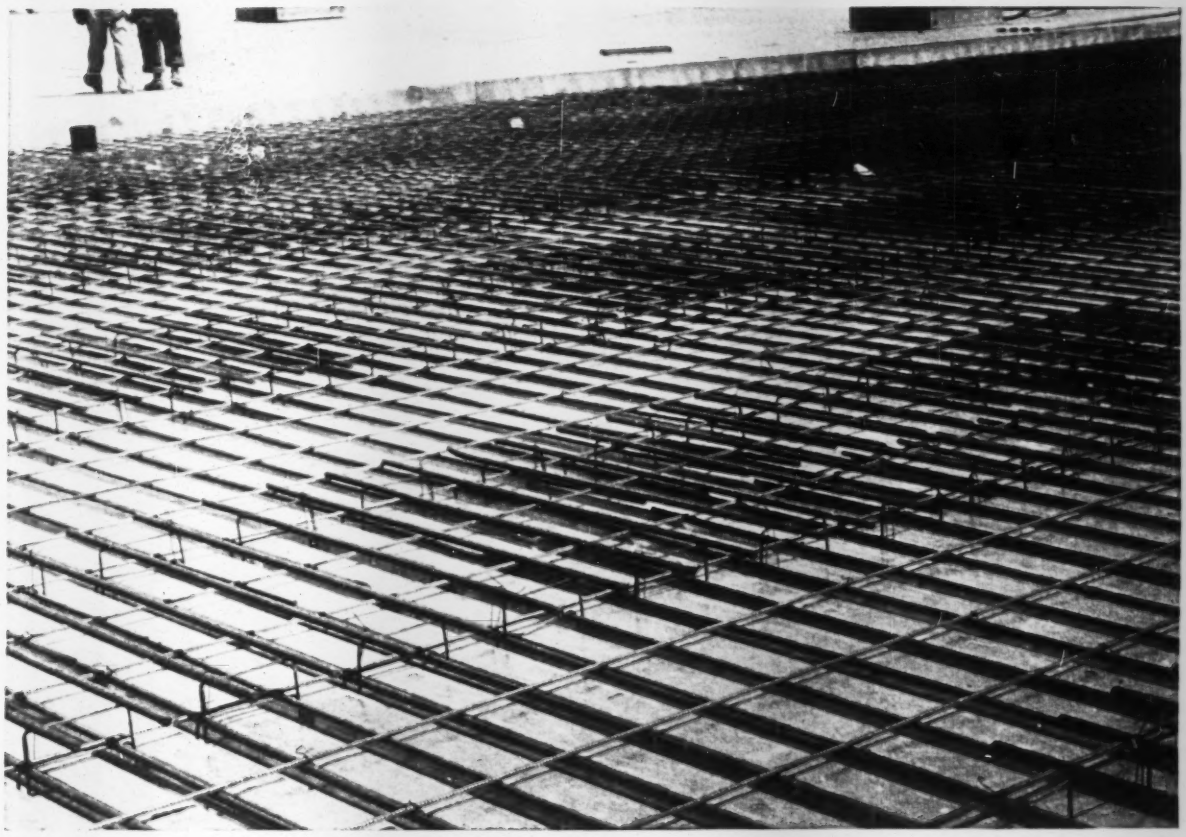
Harold R. Shipman has been appointed chief of the Pan American Sanitary Bureau's Branch of Environmental Sanitation.

Retirements

Charles G. Hoerner, division engineer for the New York City Board of Water Supply, has retired. Mr. Hoerner started his professional career shortly after graduation from Cooper Union in 1909 and since then has continuously served the city in various engineering capacities. He has worked on the construction of practically all the large dams, tunnels, and related structures of the city's upstate water-supply systems.

Honors

William W. Moore of Dames & Moore, consulting engineers, San Francisco has been appointed to the panel of judges for the Alfred A. Raymond Award of Raymond International, Inc. for a term of three years. Continuing members of the panel, which judges the papers submitted in the annual competition, are Prof. Ralph B. Peck, University of Illinois and F. A. Dockstader, consulting engineer, Boston.



LACLEDE PREFABRICATED SLAB REINFORCEMENT SAVES 100,000 TIES IN NEW PLANT CONSTRUCTION

Laclede multi-rib round reinforcing bars shop welded into special prefabricated units saved hours of costly time in the construction of floor slabs for Chrysler Corporation's new St. Louis Assembly Plant.

Eighty-seven thousand of these top and bottom steel reinforcing units, each consisting of two bars up to 15' long welded to supporting frames, were used in the construction of 485,000 square feet of flooring.

Fabricated to extremely accurate dimensions, units were easily handled and dropped into place on the metal deck. Approximately 100,000 ties were saved by the use of these special Laclede-designed units.

CHRYSLER CORPORATION ST. LOUIS ASSEMBLY PLANT
St. Louis County, Mo.

General Contractor: H. D. Tousley Co., Inc., Indianapolis
Architect: Albert Kahn,
Associated Architects and Engineers of Detroit

LACLEDE®

LACLEDE STEEL COMPANY

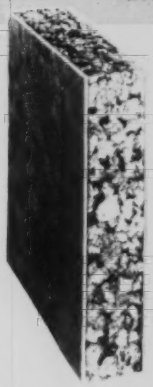
SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction

SERVICISED

JOINT FILLERS

for Concrete Paving

Three widely used Servicised Premolded Joint Fillers are briefly described below. Complete details, specifications and samples of any particular type or types are available on request.



KORK-PAK®

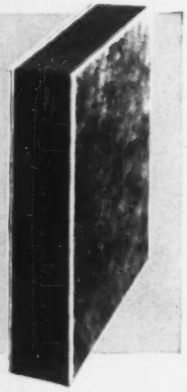
An exclusive Servicised development KORK-PAK consists of asphalt and granulated cork formed between two sheets of asphalt saturated paper.

advantages

1. It is non-extruding
2. Recovers more than 80% of original thickness after compression
3. Low moisture absorption
4. Readily handled without breakage
5. Least expensive non-extruding type

recommended uses A general purpose joint filler, particularly for highway work where the top of the joint can be thoroughly sealed with Para-Plastic.

ASPHALT



A composition of asphalt, vegetable fibre and a small percentage of finely divided mineral filler, formed between two sheets of asphalt saturated paper.

advantages

1. Forms an easily compressible cushion
2. Is highly waterproof
3. Low in cost

recommended uses **For interior concrete floor construction where black color is not objectionable, and most extensively in the formation of contraction joints in concrete construction where a ¼" or ⅜" thickness is often used.**

FIBER

Cane Fiber Joint Filler is a non-extruding, resilient bituminous material consisting of cellular cane fibers securely bound together and uniformly saturated with a suitable bituminous binder.

advantages

1. It is non-extruding
2. Ordinary carpenter saw can be used for cutting
3. Lowest cost non-extruding type
4. Recovers more than 70% of original thickness after compression

recommended uses

An all-purpose joint filler extensively used for highway work where the upper portion of the joint can be thoroughly sealed with Para-Plastic Bituminous Rubber sealing compound. The complete line of Servicised Joint Fillers is described in the Servicised Catalog. Write for your copy.

SERVICISED PRODUCTS
CORPORATION
6051 WEST 65th STREET • CHICAGO 38, ILLINOIS

Obituaries

E. E. Halmos, Sr., Dies; River, Harbor Designer

Eugene E. Halmos, Sr., an active associate in Tippetts-Abbett-McCarthy-Stratton, has died at the age of 81.

Born and educated in Hungary, Mr. Halmos began his engineering career in the U. S. in 1910 as a draftsman for the New York Central Railroad.

For 35 years he was with Parsons, Brinckerhoff, Hall & Macdonald and its antecedants—including a 12-year period as chief engineer of the one-time subsidiary, Parklap Construction Co.

He designed hydroelectric plants for Sherman Island, N. Y., and graving docks for Norfolk, Va., among many other river and harbor projects.

He was a contributor to the American Civil Engineers Handbook.

Elliott B. Van Hook, 60, retired civil engineer at Bryn Mawr, Pa. He was associated with the United Engineers and Constructors when he retired a year ago. He was a graduate of Pennsylvania State University.

Thomas Dempsey, a construction superintendent for more than 35 years in Binghamton, N. Y. He took part in construction of the First National Bank, the Binghamton Savings Bank, the U. S. Navy Training Center and the Collier St. Bridge in Binghamton.

Edward A. Curtis, 66, a former Cleveland architect. He helped plan and build the Pentagon in Washington, D. C., other government installations and airplane hangars. At the time of his death he was associated with the David Taylor Model Basin in Washington, D. C.

(*Obituaries continued p. 197*)

for better answers to your problems in **windows and curtain walls**

IT PAYS YOU TO **CALL BAYLEY**

When you want expert engineering counsel with specialists in window and curtain-wall problems, *call Bayley*.

When you want to be sure you're working with people who have a long, comprehensive background of curtain-wall experience, *call Bayley*.

When you want windows and curtain walls that meet every test for strength, easy installation, durability, and fine performance, *call Bayley*.

When, in addition, you want products backed by responsible people who share your concern for the success of your project, from first planning stages to occupied building, *call Bayley*.

Bayley has been delivering this top-quality combination of goods and services for more than *three-quarters of a century*.

You can be certain Bayley will take extra care to see that, when you specify Bayley Windows or Curtain Wall Systems, *you'll be glad you did!*

Your local Bayley representative will welcome a call at any time.

See Sweet's File (Architectural or Industrial Construction) or send for personal copies of the following Bayley catalogs: **Aluminum Windows, Steel Windows and Doors, Curtain Wall Systems, Guard Window Detention Systems.**

ATLANTIC NATIONAL BANK, West Palm Beach, Florida. ARCHITECT: S. L. Shepherd, West Palm Beach, Florida. CONTRACTOR: Arnold Construction Company, West Palm Beach, Florida.

The WILLIAM BAYLEY Co.
Springfield, Ohio

District Sales Offices:
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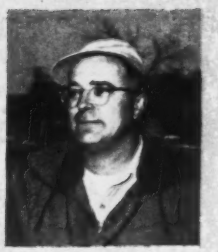
ORIGINATORS • DESIGNERS • MANUFACTURERS • INSTALLERS

"We build Sewage Treatment and Water Filtration Plants"



"I build Industrial and Commercial"

"We are building Bridges and Overpass Structures"

"Schools are our specialty"

Each has CONCRETE FORMING PROBLEMS....
ALL are *Profitably* solved
by renting UNI-FORM Panels

Whatever the type of job.... it will pay you to investigate the **UNI-FORM** *Rental "Package" Plan*

INFORMATION Send us a set of plans for a job you're bidding. From these, our Engineering Department will tell you:

1. Total form contact area in square feet
2. Total square feet of forms required
3. Number of ties required
4. Forming recommendations

PLUS a complete proposal, advising what it would cost to rent the complete UNI-FORM "Package" for the job.

PRODUCT A complete, ready-to-use concrete forming "package" . . . tailored (**not adapted**) to handle your specific job—on a *rental* basis. Forms in the most efficient sizes, Ties, Tie Keys and accessories will be included in the proposal.

SERVICE When you rent UNI-FORM Panels, you get, at no extra cost, the services of Universal Engineers—experienced concrete forming specialists—who provide complete job details, job-site service.

Contractors all over the country depend on UNI-FORM Panels and Universal Engineering assistance to help keep their concrete forming on a profitable basis. Why not investigate the UNI-FORM Rental "Package" Plan? There's no obligation. Write for details . . . send us your plans.

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Universal Form Clamp Co. of Canada, Ltd., 226 Norseman St., Toronto, Ontario

. . . Obituaries

Joseph M. Allen, 61, a former civil engineer for the City of Cincinnati before going into private practice in 1935. He was one of the first men to be licensed as a professional engineer and surveyor in Ohio.

Karl E. Wohlleb, 74, president of the marine contracting firm of Wohlleb & Socie, Toledo. He was a building contractor before he founded the firm in 1923.

Scott J. Miller, 74, president of the Scott Miller Construction Co., St. Marys, Ohio. He established his company 40 years ago.

Carl W. Ziegler, 62, Trumbull County, Ohio, engineer for the past four years. He had been a member of the county engineer's office for 34 years.

Edgar J. Bohanan, 69, retired construction engineer at Indianapolis. He supervised erection of many of the large buildings in central Indiana.

L. F. Bailey, 66, superintendent of Sullivan & Cozart, Inc., a Louisville, Ky., construction firm. He supervised the building of many of the large industrial plants in the Louisville area.

Neil F. Gill, 57, vice president of the Edward H. Meyer Construction Corp., Neenah, Wis. He was a past president and treasurer of the Upper Peninsula (Mich.) Contractors Association.

C. O. White, 53, engineer with the Tennessee Valley Authority for nearly 24 years. He worked with TVA's heavy equipment department.

Gustav Hirsch, 82, president of Hirsch Organization, Columbus, Ohio, electrical contractors. A graduate of Ohio State University in 1897, he was with the Army Signal Corps in Havana in the Spanish-American War. Since 1902 he had been a consulting engineer and a contractor for radio, telephone, gas and broadcasting concerns.

J. Frank Barrett, 70, a prominent San Francisco builder who created a multimillion dollar construction firm from a 1912 investment of $450. His firm of Barrett & Hilp built the anchorages for the Golden Gate Bridge and numerous hospitals, schools, private homes and commercial and industrial buildings in the San Francisco area.

Matthew J. Lynch, 78, of Portland, a highway contractor in the Pacific Northwest since the beginning of the automobile age. He was a partner in Cascade Construction Co. A director of

safest !
If the new Remington Captive Stud Tool is accidently fired into inadequate base material . . .
Captive Stud Guard Assembly prevents free flight of stud, which is locked to tool during firing.

New exclusive guard assembly makes the

Remington Stud Driver

safest powder-actuated tool ever designed

Fast, efficient and now the safest! The Remington Stud Driver with Captive Stud Guard Assembly anchors fastening studs permanently in concrete or steel. But if base material is inadequate, the stud stops short—no danger of free flight!

When you use the Remington Stud Driver with Captive Stud Guard Assembly, you have the convenience of a tool that's powder-actuated...no outside connections needed, no pre-drilling required. Just squeeze the trigger and the stud is set!

Choose from a *complete* selection of studs and Power Loads for all ¼" and many ⅜" fastening applications. You'll save time and money on every job!

Send coupon below for full information about Remington Tools.

CHOOSE THE POWER MOST EFFICIENT FOR YOU. REMINGTON POWER TOOLS ARE AVAILABLE IN **AIR • ELECTRIC • GASOLINE AND POWDER-ACTUATED MODELS**

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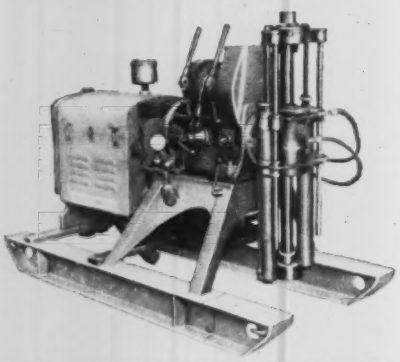
"THIS IS THE BEST MACHINE FOR MOST CORE DRILLING JOBS"



IT'S AN S&H MODEL 40-CL

We've heard this phrase over and over again from our many customers. They know that it is unsurpassed for foundation investigation, mineral exploration, and grout hole drilling.

THIS IS WHY THEY BOUGHT A 40-CL

- **STABILITY** — Wider, longer skids and a sturdy steel frame make it very difficult to tip even when moving in mountainous terrain.
- **DEPENDABILITY** — The heavy-duty wire line hoist coupled with a rugged power unit offers more hoisting power than you'll ever need at the rated capacities.
- **ADAPTABILITY** — The choice of . . . power units, screwfeed or hydraulic swivelheads in varying spindle sizes, four transmission speeds and the availability of a side-mounted cathead and a built-in retracting mechanism makes the 40-CL adaptable to most drilling jobs.
- **MOBILITY** — The 40-CL has a built-in set of sheaves to facilitate movement under its own power. In addition a low-bed trailer is available that permits the use of the rig directly from the trailer mounting in locations where the terrain permits.
- **QUALITY** — Careful machining and time-tested inspection methods substantially increase the trouble-free drill life.

If you want a machine for truck mounting, ask about our 40-C TRUCK-MOUNT. When you want an "all-round" core drill machine, remember that the 40-C and 40-CL Core Drills are just the machines for you.

Look for our emblem. It's your Seal of Quality

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. . . Obituaries

the Portland Chapter of Associated General Contractors from 1930 to 1948, he was its president in 1937.

Charles A. Hayworth, 67, of Boone, N. C., a retired district engineer of the North Carolina Highway Department. He had been with the department from 1922 until his retirement.

E. Harper Thomas, 52, assistant chief engineer for the Washington Toll Bridge Authority, in Seattle. He was chief engineer in charge of the Hood Canal Bridge, now under construction, and one of the designers of the Lake Washington floating bridge. He served at one time as chief engineer for the Montana State Highway Department.

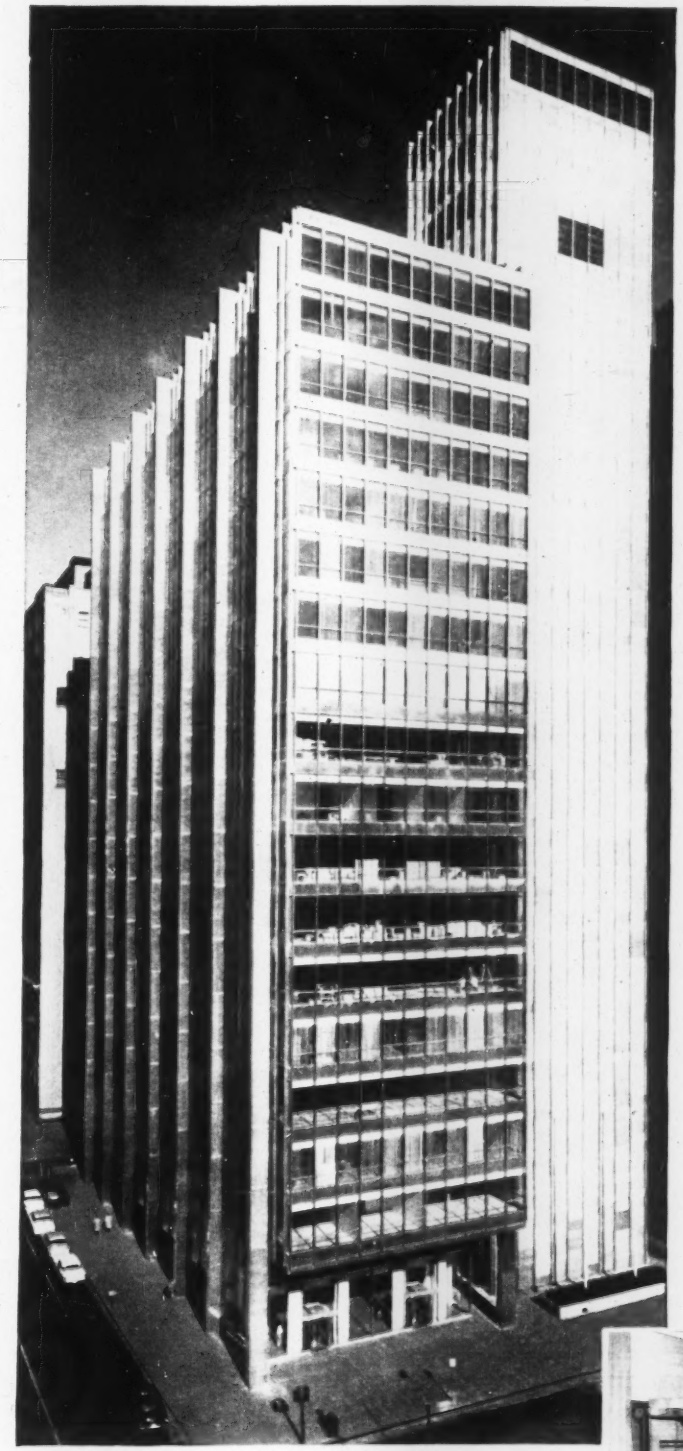
B. T. Moynahan, Sr., 67, of Nicholasville, Ky., a former commissioner of rural highways of the Kentucky Department of Highways. He was also a former district engineer for the department.

Harry J. Terker, 62, founder and president of Terry Contracting, Inc., New York bridges building and steel erecting firm. Mr. Terker began his career in a steel fabricating plant owned by his father. Before entering the heavy constructing field in 1941, he manufactured tubular steel furniture. With the advent of World War II, he began building drydocks in the Pacific for the military. Later military work included Air Force hangars in Iceland, the Azores, and the U. S. He listed among his bridge work: a span across the Potomac River in Washington; New York City's Third Avenue Bridge over the Harlem River; one level of the Queensboro Bridge; and new approaches to the Brooklyn Bridge.

Polk L. Threlkeld, 72, former director of public works at Asheville, N. C. He also served at Asheville as assistant district engineer of the North Carolina Highway Department and as director of projects and planning for the office of the Works Progress Administration in that city.

Charles Camsell, 82, a former Deputy Minister of Mines in Canada. A former Commissioner of the Northwest Territories, he was one of the men responsible for the development of northern Canada. He was a past president of the Engineering Institute of Canada.

Joseph A. Sullivan, 68, a former contractor and, at one time, commissioner of public buildings in Providence, R. I. He built many of the public buildings in Providence.



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will **not** be a problem
at the new
INLAND STEEL BUILDING...

because of International Revolving Doors!

An outstanding example of design and efficiency, the Inland Steel Building incorporates the very latest features and materials available.

Entrance to the building is facilitated through two motorized International revolving doors which turn automatically at a constant speed of 8 revolutions per minute. Persons entering or leaving need not exert any effort — with the doors turning automatically, all they do is walk through the entrance. The doors have a speed limit of 12 revolutions per minute — no matter how hard a pedestrian may push on the door, the braking mechanism holds back acceleration.

Spaced conveniently, the two "always open — always closed" revolving doors will handle the entire burden of this 19-story building's daily traffic . . . permitting safe entry and egress for an estimated 2,400 persons per hour.

The main entrance is set back from the building line and is protected by the upper floors which project out over the street level entrance. The attractive, modern revolving door entrances are perfectly in keeping with the over-all architectural design of this newest addition to Chicago's skyline.

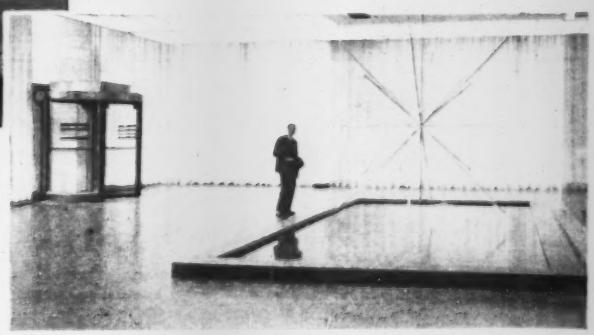
Find out how well functional and beautiful International revolving doors will fit into your building or modernizing plans. Write for proof of the efficient, economical performance at other installations.

INTERNATIONAL — ALWAYS OPEN — ALWAYS CLOSED — REVOLVING DOOR

REVOLVING DOOR ENTRANCE DIVISION

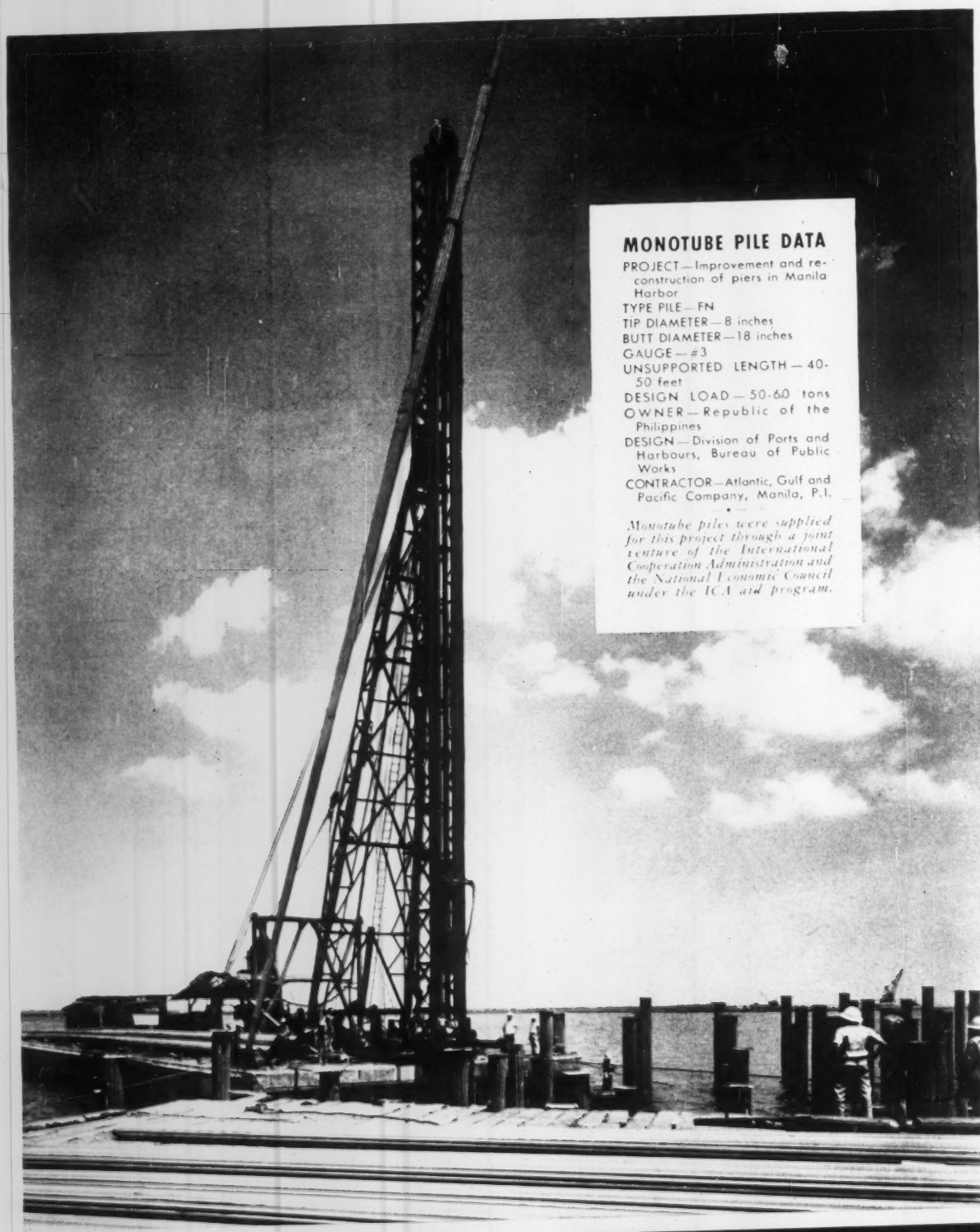
INTERNATIONAL STEEL COMPANY

1455 Edgar Street • Evansville 7, Indiana



Architects and Engineers: Skidmore, Owings & Merrill
General Contractors: Turner Construction Co.

Your building superintendent should have a copy of the "Modern Entrance Maintenance" manual which contains valuable tips and information on all types of entrances. A copy will be sent free on request on your letterhead.



MONOTUBE PILE DATA

PROJECT—Improvement and reconstruction of piers in Manila Harbor
TYPE PILE—FN
TIP DIAMETER—8 inches
BUTT DIAMETER—18 inches
GAUGE—#3
UNSUPPORTED LENGTH—40-50 feet
DESIGN LOAD—50-60 tons
OWNER—Republic of the Philippines
DESIGN—Division of Ports and Harbours, Bureau of Public Works
CONTRACTOR—Atlantic, Gulf and Pacific Company, Manila, P.I.

Monotube piles were supplied for this project through a joint venture of the International Cooperation Administration and the National Economic Council under the ICA aid program.

EASY HANDLING with Monotube piles. The strength, rigidity and light weight of the fluted steel Monotube permits a simple one point pick up of this 140-foot pile. The pile being quickly and easily positioned for driving is one of 4310 piles manufactured by Union Metal for use in the improvement and reconstruction of piers in Manila Harbor.

Tapered, fluted Monotube piles are available in lengths, diameters and gauges to meet every requirement. Write The Union Metal Manufacturing Co., Canton 5, Ohio, for complete information.

UNION METAL

Monotube Foundation Piles

New Jersey 'Gravity' Dam

Fly ash pitted against natural cement as Newark takes alternate concrete bids for Pequanock River project

Based on the fly ash alternate that was bid 2.2% below the natural cement mix design, this $3,820,300 contract went to Berlanti Construction Co., Inc., Harrison, N. Y., at only a fraction of a percent above the engineer's estimate.

The job involves construction of a concrete gravity dam across the Pequannock River near Newfoundland, N. J., to form the Charlottebug Reservoir for the Newark, N. J. water supply.

George W. Andress is Director of the Department of Public Works. Parsons, Brinckerhoff, Hall & Macdonald, New York City, is the consultant.

The dam, in Morris and Passaic Counties, will be approximately 700 ft long, with a maximum height of 100 ft above foundation rock. It will include a spillway 200 ft long, surmounted by a bascule gate 5 ft high, a stilling basin, intake structure with operating equipment, gate house and other appurtenances.

Work also includes relocation of a 2 mile section of the Charlottebug Pond—Timberbrook Road, which will require construction of a 3 span, 180 ft roadway bridge across the Pequannock River.

Concrete at $20 a cu yd for the spillway and bulkheads, and for the intake monolith, accounts for 39% of the contract. Other prices on the spillway and bulkhead concrete ranged from $15 to $34 a cu yd, and for the intake monolith, from $25 to $60 a cu yd.

Cement is paid for separately, and the engineer will design the mix.

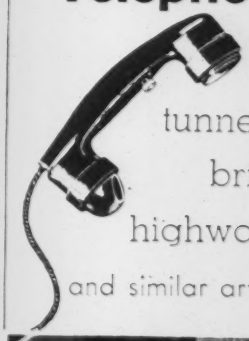
The contractor furnishes all materials. Rail and truck transportation is available. The railroad is at the site.

1C Berlanti Constr. Co., Inc., Harrison, N. Y. — $3,820,300
2 Geo. M. Brewster & Son, Inc., Jos. Miele Constr. Co., Inc., LaFera Contr. Co., Inc. and C. Salvatore & Sons, a Jt. Venture, Bogota, N. J. — 4,294,165
9 S. J. Groves & Sons Co., New York City — 6,043,529
EE Parsons, Brinckerhoff, Hall & Macdonald, New York City — 3,818,875

Bids: 11-19-58 Items	Unit	Quantity	Unit Prices 1C	2
Diversion & care of water during construction	ls	job	$100,000	$75,000
Clear & grub	ls	job	40,000	225,000
Excavation, earth, for dam	cy	110,000	0.65	1.50
bridge	cy	460	6.00	10.00
road	cy	61,000	0.65	1.00
rock, for dam	cy	53,000	3.00	5.00
bridge	cy	450	5.00	15.00
road	cy	12,000	2.50	5.00
pipe trench	cy	300	15.00	20.00
Borrow excavation, road	cy	1,000	1.00	1.00
dam	cy	4,000	1.00	1.00
Backfill, dam	cy	53,000	1.00	0.85
Timb. shtg. & bracg. left in	Mfbm	100	150.00	1.00
Rock fill	cy	5,400	4.00	1.75
Dumped riprap	cy	8,200	4.00	3.00
Paving, stone block, 12"	sy	600	7.00	18.00
8"	sy	500	7.00	12.00
Screened gravel backing	cy	3,300	5.00	5.00
Crushed stone filter	cy	600	7.00	5.00
Gravel surf. crse. for road	cy	5,700	3.50	2.25
Topsoil, strip additional	cy	500	1.50	2.50
Seeding	sy	2,500	0.10	0.30
cover crop	sy	34,000	0.10	0.20
Mobilize & demolish fndn. drillg. & grtg. plant & equip.	ls	job	6,000	500.00
Drill core holes in conc.	lf	4,000	6.00	5.00
rock	lf	6,500	7.00	5.00
drain holes in rock	lf	900	10.00	8.00
Wash & pres. test grt holes	hr	100	40.00	15.00
Cement, pressure grtg. fndn.	bag	1,200	10.00	4.00
Bentonite for grout mix	lb	6,000	0.20	0.05
Conc. masonry, spillwy. & bulkhds.	cy	64,000	20.00	20.00
intake monolith	cy	11,000	20.00	25.00
stilling basin floor	cy	4,700	19.00	27.00
stilling basin & intake retain. walls	cy	4,500	24.50	26.00
gatehse. superstruct. & deck railing	cy	220	75.00	115.00
P. cmt. for conc. dam masnry., alt 1, comb. with fly ash	bbl	63,000	4.75	5.50
alt 2, comb. with nat. cmt.	bbl	73,000	4.75	5.50
Alt 1, fly ash	t	5,000	15.00	17.00
Alt 2, natural cement	bbl	24,000	4.75	5.50
Retarding densifier admixt.	gal	700	2.00	15.50
Vacuum treatment	sy	3,000	3.00	7.00
Drill & grt. anchor bars	lf	2,200	2.00	3.00
Conc. masnry. for bridge refill	cy	1,520	68.00	42.00
	cy	200	58.00	50.00
P. cmt. for conc. masnry. for bridge & refill	bbl	2,500	4.75	5.50
Steel reinforcement	lb	500,000	0.20	0.20
Plastic waterstops, type A	lf	2,300	2.50	3.00
type B	lf	2,300	3.50	2.00
CMP underdrain, split 10"	lf	1,700	4.25	4.00
culvert, 18"	lf	340	8.25	7.00
30"	lf	70	17.00	15.00
42"	lf	80	22.50	24.00
culv. pl. arch, 76"x57"	lf	190	50.00	52.00
Reinf. conc. culv. pipe 96"	lf	135	52.00	55.00
Stl. pipe for fndn. drns., 4"	lf	1,700	5.00	6.00
Water supply system	ls	job	1,000	3,000
Float wells & pipe system	ls	job	2,500	3,000
Sump pump & piping system	ls	job	700.00	1,000
Misc. metal piping systems	ls	job	75,000	100,000
Stl. pipeline, exist. 48", supp., protect & maint.	ls	job	100,000	31,000
remove	ls	job	10,000	6,500
fill with concrete	ls	job	10,000	1,500
Reinf. conc. pres. pipe, 54"	ls	job	15,000	12,500
Cast iron stop plank guides	ls	job	30,000	27,000
Iron castings, misc.	lb	5,000	0.50	0.50
Stop plank lifting beam	ls	job	1,500	1,000
Steel trash racks	ls	job	18,000	15,000
Misc. metal work	lb	11,500	1.00	0.50
Guide railing, beam type	lf	400	4.25	5.00
Bridge railing, aluminum	ls	job	5,000	6,000
Misc. aluminum work	lb	8,700	2.75	3.50
Timber stop planks	ls	job	12,000	19,000
Discharge valve, 24"	ea	1	16,000	18,000
30"	ea	1	19,000	21,000
Motor oper. cone valve, 30"	ea	2	15,000	14,000
sluice gates, 48"	ea	3	8,500	7,000
Broome gate, frames & guides	ls	job	45,000	45,000
Bascule gate, 200 x 5	ls	job	155,000	175,000
Traveling crane, 10 ton	ls	job	17,000	22,000
Water level indicat. & record	ls	job	1,500	2,000
Emergency diesel-electric generating plant	ls	job	15,000	10,000
Gate house superstruct.	ls	job	20,000	22,000
Struct. steel for bridge	lb	157,000	0.12	0.16
Stud shear conns. for bridge	ea	3,550	1.00	0.30

Awarded Jan. 16.
Completion schedule: 500 working days.
Liquidated damages: $200 working day.

Sound Powered Telephones



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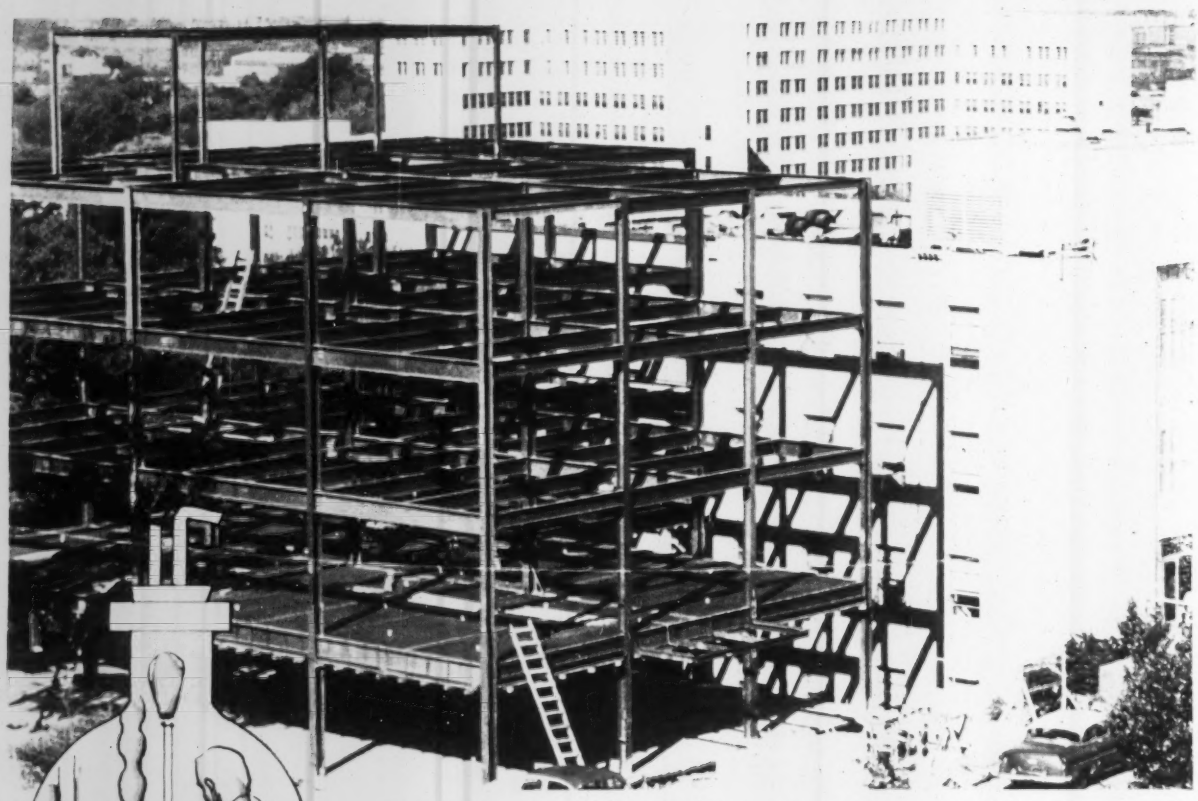

Kettering-Meyer Laboratory No. 2 at Southern Research Institute, Birmingham, Alabama
Shown here under construction.

Important to human progress . . . a building of INGALLS steel . . .

Kettering-Meyer Laboratory No. 2, a recently completed addition to Southern Research Institute facilities, was designed for cancer research.

Structural steel for this new building, as well as for two other buildings at the Institute, was fabricated and erected by Ingalls. Structural steel, with its advantages of great strength and economy, is the ideal construction material for these buildings.

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Erected by the Ingalls Steel Construction Company
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Engineers: Wilmore, Hudson and Luke
General Contractor: Daniel Construction Company

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Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† R. I., Quonset Point—EXTERIOR DOORS—BA 2.27—Dist. P. Wks. Office, 1st Naval Dist., Bldg. 37, 495 Summer St., Boston, Mass., replacing exterior doors for Bldgs. 374 and 375, U. S. Naval Air Station, NBy 20704. Spec. 20704/58. $25,000-$100,000. Plans deposit $25.

BUILDINGS—BA

Mass., Salem—AUDITORIUM, etc.—BA 2.27—Commonwealth of Mass., Dpt. Educ., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, E-607, Contr. 3, convert auditorium, library, administration offices and classrooms, etc., State Teachers College, $400,000. Plans deposit $30. James H. Boulger, 150 Washington St., archt.

† Me., Madawaska—BORDER STATION—BA 3.10—P. Bldgs. Service, GSA, Design & Constr. Div., Rm. 600, Post Office and Courthouse, Boston 99, Mass.; U. S. Border Station, Appr. No. 47K1151, Proj. No. 17070. Plans deposit $35.

HEAVY CONSTRUCTION—LB & CA

Waghorne-Brown Co., 18 Cornhill, Boston, Mass.: LB $314,948, est. $300,000, car-handling facilities, steel ramp, elevating housing, etc., Rockland, Vinalhaven, Lincolnville, Isleboro, Mckinley, and Swans Island, MAINE, State Dirs. Maine Port Auth., State Pier, Portland, Me. Bids Feb. 3. CD 1-19.

MASSACHUSETTS — Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened 2-3:

Continental Constr. Corp., 87 Waite St. Extension, Malden, Mass.: LB $129,096, est. $153,054, Chapter 90, hy. work, Nahanton and Kendrick Sts., Needham. CD 1-22.

North Atlantic Dredging Co., 62 Condor St., East Boston, Mass.: LB $96,730, est. $94,625, harbor improv., Bailey's Creek-Cohasset Harbor, Cohasset, MASSACHUSETTS, Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Bids Feb. 3. CD 1-25.

BUILDINGS—LB & CA

Ellis C. Snodgrass, Inc., 465 Congress St., Portland, Me.: CA Est. $150,000, PAPER MILL renovations, CUMBERLAND MILLS, ME., S. D. Warren Co., 89 Cumberland St., Cumberland Mills, Me. Charles T. Main, Inc. (Paper Div.), 230 Congress St., Boston, Mass., engr.

W. W. Granger Co., 866 Hartford Pike, Shrewsbury, Mass.: CA Est. $500,000, rebuild Morey SCHOOL, Pine St., LOWELL, MASS., City Comm. P. Wks., City Hall, Lowell, Mass. Bids Jan. 21. CD 2-4, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

D. C., Wash.—BA 2.24—D. C. Govt., Dpt. Hys., 499 Pa. Ave., N.W., paving and widening roadway Rhode Island Ave. between Logan Circle N.W. and 4 St., N.E., Fed. Aid Proj. U-30-(16). CD 9-5.

Pa., Phila.—BA 2.26—Dpt. Procurement, City Hall Annex, grading, asphalt paving (Assessment Work), grading and asphalt paving (Assessment Work), b. conc. paving (Assessment Work), asphalt resurf., asphalt repaving and resurf., constr. traffic safety islands, reconstr. alleys and retaining wall, for Dpt. Streets. CD 11-28.

† New York and New Jersey—BA 3.5—U. S. Eng., 111 E. 16th St., New York 3, N. Y., dredging and rock removal to depth of 37 ft. below mean low water involving removal 81,800 cu. yd. place measurement, of rock and 75,900 cu. yd. place measurement, of material other than rock from New York and New Jersey Channels, Section 4, Rock Area 14, CIVENG-59-075-59-35. CD-9-22.

▲ N. Y., Brooklyn—SHIPPING TERMINAL—BA 3.6—Dpt. Marines & Aviation, Pier A, North River, New York, Zone 4, substructure of four-berth Mitsui Line pier at 36-39th Sts., Gowanus Bay, $5,675,000. CD 7-5-56.

BUILDINGS—BA

N. J., Ridgewood—CHURCH, etc.—BA 2.23—First Reformed Church of Ridgewood, 126 Union Rd., church and education bldg., Prospect St., $400,000. Carl Lovell, 119 Rock Rd., Glen Rock, archt.

HEAVY CONSTRUCTION—LB & CA

▲ Tully & Dinapoli, Inc., 127-50 Northern Blvd., Corona, N. Y.: LB $1,040,250 (6 bidders), Contr. GWB-190.005, Sections 4 and 6 of approach roadway sys., New York for lower level expansion, George Washington Bridge, NEW YORK and NEW JERSEY, Port of New York Authority, 111 Eighth Ave., New York 1, N. Y. Bids Feb. 3. CD 1-7.

Hambly Constr. Co., Inc., Box 151, Massena, N. Y., LB $93,583 (7 bidders), addnl. access road, utilities, boat facilities and site development on Barnhart Island near Massena, St. Lawrence Co., Spec. No. PA-5-10045, St. Lawrence Contr. No. 51, NEW YORK, Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids Feb. 5. 1-19.

† Tidewater Dredging Co., 44 Whitehall St., New York 4, N. Y.: LB $134,142 (6 bidders), dredging to depths of 10 and 12 ft. below mean low water involving removal 95,000 cu. yd., place measurement material except ledge rock from Port Chester Harbor, CIVENG-30-075-59-30, NEW YORK, U. S. Eng., 111 East 16th St., New York 3, N. Y. Bids-Feb. 3. CD 1-12.

Hendrickson Bros., Inc., 61 N. Central Ave., Valley Stream, N. Y.: CA $863,200, addn., alterations to Nassau County Sewage Disposal Plant, Bay Park, MINEOLA, N. Y. County Executive, Nassau County, Old County Court House, Mineola, N. Y. CD 11-7-56. Engr., N. Y. Bay Park.

A. Rosen & Son, 211 E. 117th St., New York 35, N. Y.: LB $108,442 (7 bidders), replace various water lines with brass pipe on 4th floor of Municipal Building, 2 Centre St., Manhattan Boro, NEW YORK, N. Y. Dpt. P. Wks., Rm. 1800-L, Municipal Bldg., New York 7, N. Y. Bids Feb. 3. CD 1-27.

E. E. Zeek, Inc., Intervale Rd., Parsippany, N. J.: LB $86,183, water mains, RIVERDALE, N. J. Borough of Riverdale, Borough Hall, Riverdale, N. J. Bids Jan. 14. CD 12-23.

▲ MARYLAND—State Rds. Comm., 108 E. Lexington St., Baltimore 2. Bids opened 2-3:

C. J. Langenfelder & Sons, 8427 Pulaski Hy., Baltimore, Md.: LB $1,847,299 (5 bidders), first phase, Northeastern Expressway State Roads, Baltimore Co. CD 1-8.

▲ MARYLAND—State Rds. Comm., 108 E. Lexington St., Baltimore 2. Bids opened 2-3.

McLean Contg. Co., Fidelity Bldg., Baltimore, Md., LB $2,286,196 (9 bidders), Bear Creek Bridge No. 2 and overpass, Baltimore Co. CD 1-8, under Streets and Roads.

BUILDINGS—LB & CA

Norit Constr. Co. & DiPace Constr. Co., 76 Court St., Brooklyn 2, N. Y.: LB $266,100 (15 bidders), general contract CENTRAL FIRE COMMUNICATIONS BLDG., Clove Lake Park, Richmond Boro, NEW YORK. Dpt. P. Wks., Rm. 2200, Municipal Bldg., New York 7, N. Y. Bids Feb. 4. CD 1-9.

▲ Novak & Co., Inc., 1503 East New York Ave., Brooklyn 12, N. Y.: LB $972,737 (6 bidders), plumbing for Cumberland HOSPITAL, Auburn Pl. and N. Portland Ave., Brooklyn Boro, BROOKLYN, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Feb. 4. CD 1-20.

AFGO Engineering Corp., 475 Adelphi St., Brooklyn 17, N. Y.: LB $1,068,440 (5 bidders), heating and ventilating for Cumberland Hospital, Brooklyn, N. Y.

Davidson Electric Co., 1265 Atlantic Ave., Brooklyn 16, N. Y.: LB $772,000 (13 bidders), electrical work for Cumberland Hospital, Brooklyn, N. Y.

▲ Anthony Linguanti & Co., 5 Central Ave., Spring Valley, N. Y.: LB $1,066,350 (14 bidders), general contract 3 story JUNIOR HIGH SCHOOL, Clairmoor Lane, incl. sewage disposal sys., NEW CITY, N. Y., Clarkstown School Dist. No. 1, New City, N. Y. Bids Jan. 29. CD 1-16.

Nathan Richmond, c/o Herbert & Clarence Lilien, archts., 1841 Broadway, New York 23, N. Y., Owner Builds, $800,000, 90 unit MOTEL, 254th St. and Broadway, NEW YORK, N. Y.

Barlow-Meagher Co., 101 Park Ave., New York 17, N. Y.: CA Est. $650,000, CLASSROOM BLDG. and CONVENT for St. Roch's Church, 602 Richmond Ave., RIDGEBANK, N. Y. Archdiocesan Bldg. Comm., 451 Madison Ave., New York 22, N. Y. Robert J. Reiley, 45 W. 45th St., New York 19, N. Y., archt.

▲ Jonwal Constr. Co., 1565 Franklin Ave., Mineola, N. Y.: CA Est. $2,000,000, JUNIOR HIGH SCHOOL, WEST ISLIP, N. Y., Bd. Educ., West Islip, N. Y., Frederic P. Winderson, Assocs., 65 Roosevelt Ave., Valley Stream, N. Y., archts.

Fucetola Bros., 25 River Rd., North Arlington, N. J.: CA Est. $500,000, 28 lane BOWLING ALLEY, 400 Market St., EAST PATERSON, N. J., Maritone Realty Co., 125 Market St., East Paterson, N. J., Fred N. Fisher, 2312 Morris Ave., Union, N. J., archt.

United Constr. Co., 1204 Lincoln Ave., Pittsburgh 6, Pa.: LB $522,000 (8 bidders), general contr., ELEMENTARY SCHOOL BLDG., and secondary facilities addn. for Berlin Brothersvalley Jt. School Bd., BERLIN, PA., Pa. Dept. School Auths., 101 S. 25th St., Harrisburg, Pa. Bids Feb. 3. CD 1-21.

▲ Consolidated Engineering Co., 29 E. Franklin St., Baltimore 2, Md.: CA $1,150,000, brick, concrete, steel TRUCK CAR SHOP addn., 2122 Broening Hy., BALTIMORE, MD., Chevrolet Motor Co., 1044 W. Grand Blvd., Detroit, Mich.

▲ MacLeod Constr. Co., 2500 Frederick Ave., Baltimore, Md.: LB $1,183,000 (10 bidders), Thomas G. Hayes ELEMENTARY SCHOOL, BALTIMORE, MD., City Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. Bids Feb. 4. CD 1-23.

SOUTH

HEAVY CONSTRUCTION—BA

+ S. C., Charleston—AIRMEN'S DORMITORY—BA 2.26—U. S. Eng., 209 King St., airmen's dormitory, Charleston Air Force Base, ENG-38-081-59-118. CD 2-21.

† Louisiana—BA 3.5—U. S. Eng., foot of Prytania St., New Orleans, Item W-57, for Courtableau-Henderson levee restoration WABPL to contain 80,000 cu. yd. St. Martin Parish, Inv. 59-144.

+ S. C., Beaufort—SWITCHES—BA 3.19—Dist. P. Wks. Office, Bldg. 13, U. S. Naval Base, Charleston, 3 sectionalizing switches in primary distr. sys., U. S. Marine Corps Aux. Air Station, NBy 21139, Spec. 21139-58. Under $10,000. CD 9-8.

+ S. C., Beaufort—ELECTRICAL WIRING SYS.—BA 3.19—Dist. P. Wks. Office, Bldg. No. 13, U. S. Naval Base, Charleston, electrical wiring sys. exten., Bldg. 418, U. S. Marine Corps Aux. Air Station, NBy 21142, Spec. 21142-58. Under $25,000. CD 9-8.

BUILDINGS—BA

▲+ Va., Langley—HEADQUARTERS—BA 2.25—General Services Admin., General Services Bldg., 19th and F Sts. N.W., Wash. 25, D. C., constr. (except elevator plant and escalators) headquarters bldg., Central Intelligence Agency, Proj. 44122. Extended date. Harrison & Abramovitz, 630 5th Ave., New York, N. Y., archts. CD 12-15.

+ N. C., Charlotte—ORDNANCE MISSILE PLANT—BA 3.17—U. S. Eng., 308 Customhouse, Wilmington, truss repairs Bldg. Nos. 3 and 6, Charlotte Ordnance Missile Plant, ENG-31-075-59-41. CD 10-15-54.

S. C., Charleston—LIBRARY—BA 4.1—Charleston County Courthouse, library, $600,000, Halsey & Cummings, Champney's Alley at Exchange St., archts.

HEAVY CONSTRUCTION—LB & CA

† King-Hunter, Inc., P. O. Box 65, Jacksonville, N. C.: LB $88,445, maintenance docks and engine storage facility, IFB 31-610-59-54, Seymour Johnson Air Force Base, GOLDSBORO, N. C. CD 9-9.

Howard Constr. Co. & Lambeth Constr. Co., P.O. Box 3364, Greensboro, N. C.: CA $639,500, 58,000 lin. ft. water lines, 74,500 lin. ft. sewer lines, GREENSBORO, N. C., City of Greensboro, City Hall, Greensboro, N. C. CD 1-16, under LB.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

Howard Constr. Co. & Lambeth Constr. Co., P.O. Box 3364, Greensboro, N. C., LB $309,350, water lines various locations, GREENSBORO, N. C. City of Greensboro, City Hall, Greensboro, N. C. Bids Jan. 26. CD 3/27.

T. A. Loving & Co., P.O. Box 1291, Goldsboro, N. C., LB $364,238, House Creek Sanitary Sewer Outfall, RALEIGH, N. C. City of Raleigh, City Hall, Raleigh, N. C. Bids Jan. 30. CD 1/6.

† Henderson, Black & Green, Inc., Troy, Ala., CA $905,772, laboratory data reduction bldg., ENG-01-076-59-58, EGLIN AIR FORCE BASE, FLA. U. S. Eng., P.O. Box 1169, Mobile, Ala. Bids Jan. 27. CD 1/19.

H. W. Hunter Co., P.O. Box 3391, Lakeland, Fla., LB $218,213, gravity trunk and lateral sewers, LAKELAND, FLA. City, City Hall, Lakeland, Fla. Bids Jan. 27. CD 1/13.

▲† Clark Constr. Co., Inc., 1919 Parish Ave., Owensboro, Ky., and L. G. Wasson Coal Mining Corp., Booneville, Ind., LB $4,247,020, Walter F. George Lock and Dam, Chattahoochee River, ENG-59-38, ALABAMA-GEORGIA. U. S. Eng., 1169 Mobile, Ala. Bids Feb. 5. CD 2/2.

▲ J. Ray McDermot Co., Inc., Harvey, La., CA $775,000, 31 mi. 16 in. crude line between Delta and Norco, LOUISIANA. Shell Pipeline Corp., Shell Bldg., Houston, Tex. CD 11/29/51; under Industrial Bldgs., La., New Orleans.

Glaser Constr. Co., Inc., LaFayette, La., CA $415,000, 13 mi. 8 in., 11 mi. 12 in. crude line, Delta to Norco, Louisiana.

BUILDINGS—LB & CA

Arthur Perry, Inc., P.O. Box 1577, Jacksonville, Fla., CA $147,700, WAREHOUSE addn., JACKSONVILLE, FLA. Jax Drugs, Inc., 1300 Forest St., Jacksonville, Fla.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

Ill., Chicago—SWIMMING POOL—BA 2/27—Chicago Park Dist., 425 E. 14 Blvd., Zone 5, Lawndale Park Swimming Pool. $230,000. Ralph H. Burke, Inc., 20 N. Wacker Dr., Zone 6, engr. CD 9/30.

† O., Wilmington—GROUP HEADQUARTERS BLDG.—BA On Or About 3/12—U. S. Eng., P. O. Box 2127, Huntington 18, W. Va., group headquarters bldg., Clinton County Air Force Base, 2 mi. southeast of here on State Route 73. ENG-46-022-59-29. CD 9/5.

BUILDINGS—BA

† Ill., Fort Sheridan—FACILITIES—BA 3/2—Contracting Office, Bldg. 48-C, facilities for bldgs., IFB AV-11-074-59-44.

Ill., Chicago—FACTORY—Bids Asked—Advance Transformer Co., 2930 N. Western Ave., 1 story, 89 x 100 and 24 x 25 ft. concrete slab, steel frame, brick factory addn. $160,000. Dubin & Dubin, 228 N. LaSalle St., Zone 1, archts.

BUILDINGS—SLC

Ill., Naperville—DIAL EXCHANGE—Illinois Bell Telephone Co., 212 W. Washington St., Chicago, soon lets contract, 1 story, brick dial exchange bldg. $700,000. Holabird Root & Burgee, 180 N. Wabash Ave., Chicago, archts. CD 11/17.

HEAVY CONSTRUCTION—LB & CA

▲ Ruckman & Hansen, Inc., 3617 N. Clinton, Fort Wayne, Ind., LB $1,111,327, E. 4th Ave. grade crossing elimination, COLUMBUS, O. City, City Hall, Columbus, O. CD 12/7/54.

▲ Kenny Constr. Co., 3220 Oakton St., Skokie, Ill., CA $1,296,120, Central South Side sewerage sys., Cont. 3-C, CHICAGO, ILL. City of Chicago, City Hall, Chicago, Ill. CD 1/20, under LB.

▲ MICHIGAN—State Hy. Dpt., Stevens T. Mason Bldg., Lansing.

Greenfield Constr. Co., 1506 W. McNichols, Detroit, Mich., CA $1,393,176, 0.26 mi. grading, drainage structures and surf. service roads; excav., grading side slopes, pedestrian bridge near Clinton St., vehicular bridge at Monroe Ave., storm water pumping station, transformer and control building just north of Monroe Ave., all in section from Lafayette Ave. to north of Madison Ave., Wayne Co. Bids Dec. 10. CD 12/22, under LB.

BUILDINGS—LB & CA

▲ Selby Homes, Inc., 13532 Detroit Ave., Lakewood, O. Owner Builds. $1,700,000. 90 HOMES, River Edge and Fair Lawn Drs., PARMA, O.

Myron Miller Co., 935 Summit St., Toledo, O. CA Est. $600,000. 32 APARTMENT, 2230 Sherwood Ave., and 28 APARTMENT, 2163 Marengo Dr., TOLEDO, O. Trailway Heights, Inc., 2230 Sherwood Ave., Toledo, O. Schaider & Martin, 4231 Monroe St., Toledo, O., archts. CD 11/28, under J. A. E. Enterprises Co. and Trailway Heights, as owners.

▲ Edward J. Schroeder & Sons, Inc., 2505 Schroeder St., Toledo, O. Owner Builds. $1,300,000, eight 100-unit APARTMENTS, Alexis Rd. adjacent to Washington Junior High School, TOLEDO, O.

H. F. Campbell Constr. Co., 9301 Michigan Blvd., Detroit, Mich., CA Est. $300,000, steel frame, concrete block, 26,400 sq. ft. WAREHOUSE space and 2,400 sq. ft. OFFICE space, Expressway Industrial Park, TOLEDO, O. M. Wm. Goldman, 225 1st St., Toledo, O. Fuller Brush Co., Jessee.

Darin & Armstrong, Inc., 2041 Ferkell St., Detroit, Mich., CA $466,000 (9 bidders), excavate and build footings for 13 story STATE OFFICE BLDG., INDIANAPOLIS, IND. State Office Bldg. Comm., Old Trails Bldg., Indianapolis, Ind. Bids Jan. 24, awarded Jan. 29. CD 1/14.

O'Brien Co., 810 S. Tripp Ave., Chicago, Ill., CA $250,000, PAPER STORAGE WAREHOUSE, 2nd & Kinzie St., CHICAGO, ILL. Cuneo Press, Cermak Rd. and S. Canal St., Chicago, Ill. Awarded Feb. 1. CD 11/24.

▲† J. W. Bateson Co., 10130 Monroe Dr., Dallas, Tex., LB $6,554,000, 425 unit CAPEHART FAMILY HOUSING, storm and sanitary sewers, GREAT LAKES, ILL. Dist. P. Wks. Office, Ninth Naval Dist., Bldg. 1-A, Great Lakes, Ill. Morgan Yost & D. Coeder Taylor, 500 Green Bay Rd., Kenilworth, Ill., archts. Bids Jan. 29. CD 12/23.

Tonyan Constr. Co., 100 Borden St., McHenry, Ill., CA $180,000, 1 story, bsmntless, 36,000 sq. ft. FACTORY, OFFICE, parking area, HEBRON, ILL. Lasee Products, C/o general contractor.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

† Colo., Colorado Springs—AIR BASE IMPRVS—BA 2/24—Procurement Office, ENT Air Force Base, Colorado Springs, repair Bldg. S-16, ENT Air Force Base, IFB-05-603-59-69. CD 8/21/56.

S. D., Mitchell—BA 2/25—City, City Hall, sewage treatment plant imprvs. $400,000. Plans deposit $15. Kirkham, Michael & Assocs., 6181/2 St. Joe St., Rapid City, engrs. CD 4/30.

† Missouri and Arkansas—BA About 3/4—U. S. Eng., P.O. Box 867, Little Rock, Ark., boat dock access roads, Table Rock Reservoir, White River, CIVENG-03-050-60-35. CD 9/19.

† Colorado—BA 3/17—Bureau Reclamation Dpt. Interior, P.O. Box 780, Grand Junction, furnishing labor and material for earthwork and structures, Southside Canal, Station 18 plus 95.46 to Station 114e plus 49, Collbran Project, south of Collbran, Spec. No. DC-5155, adv. ENR 2/19. CD 9/30.

HEAVY CONSTRUCTION—LB & CA

MISSOURI—State Hy. Dpt., Jefferson City. Bids opened 1/30.

Mo., List & Weatherly Constr. Co., 424 Nicholas Rd., Kansas City, 12, Mo., LB $309,775 (7 bidders), 2-56 ft., 2-68 ft., 2-47 ft., 1-56 ft. I-beam spans and 2-42 ft., 1-115 ft. plate girder, Sta. 152 plus 18, Platte Co.

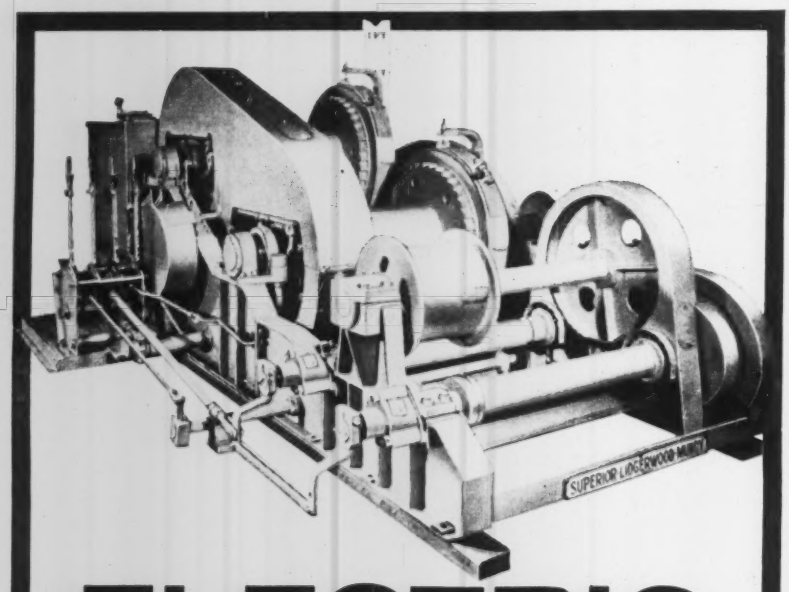
Mo., Union Constr. Co., 1401 Fairfax Trafficway, Kansas City, Kan., LB $123,745 (7 bidders), 2-49 ft., 2-60 ft., 1-50 ft. I-beam spans, Sta. 42 plus 00, Platte Co. CD 1/8.

Mo., James Gould and Ray & Son, Inc., 3627 Broadway, Kansas City, Mo., LB $91,759 (5 bidders), 2-60 ft., 1-75 ft. I-beam spans, Sta. 354 plus 36, Pike Co. CD 1/8.

▲ MISSOURI—State Hy. Dpt., Jefferson City. Bids opened 1/30.

Mo., Bernard McMenamy Constr., Inc. & Subsidiaries, 2040 City St., St. Charles, Mo., LB $90,680 (8 bidders), asphalt surf. 1.048 mi., Howell Co., LB $523,054 (8 bidders), asphalt surf. 5.521 mi., Shannon Co.

(Continued on page 206)



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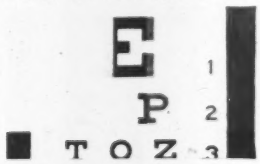

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(continued from page 204)

Mo.—**List & Weatherly Constr. Co.**, 424 Nichols Rd., Kansas City 12, Mo., LB $153,873 (9 bidders) identical bids) graded earth and culverts 0.85 mi., Platte Co.;

Mo.—**Universal Bridge Co., Inc.**, 1200 Southwest Blvd., Kansas City 3, Kan., LB $153,873 (7 bidders) (identical bids) graded earth and culverts 0.85 mi., Platte Co.;

Mo.—**Clark Constr. Co., Inc.**, 1207 South 4th St., St. Joseph, Mo., LB $153,873 (7 bidders) (identical bids) graded earth and culverts 0.85 mi., Platte Co.;

Mo.—**S. J. Groves & Sons Co.**, 1104 W. Reynolds St., Springfield, Ill., LB $928,220 (5 bidders), concrete paving 8.374 mi., Pike Co.;

Mo.—**Midwest Precote Co.**, 7600 East 17th St., Kansas City, Mo., LB $891,070 (8 bidders), b. concrete surf. on rolled stone base 9.852 mi., DeKalb Co.;

Mo.—**J. W. Githens Co.**, 501 North 10th St., Poplar Bluff, Mo., LB $164,389 (2 bidders), graded earth and culverts 3.971 mi., Dunklin Co.;

Mo.—**Griesemer Constr. Co.**, Rte. 2, Box 240, Springfield, Mo., LB $211,880 (6 bidders), graded earth, culverts 2.473 mi., Taney Co.;

Mo.—**Arthur E. Quinn Contractor**, Salisbury, Mo., LB $100,547 (10 bidders), gran. surf. 9.321 mi., Linn Co., CD 1-8.

ARKANSAS—State Hy. Dpt., State Capitol, Little Rock, Bucton Constr. Co., Hazen, Ark., CA $120,494, bridge and approaches at Bayou Meto on Hy. 11 at Jefferson-Arkansas Co. Line, Bayou Meto Bridge, Jefferson and Arkansas Counties. Bids Jan. 28. CD 1-13, under Streets and Roads.

▲ ARKANSAS—State Hy. Dpt., State Capitol, Little Rock,

Ark.—**McGeorge Contg. Co., Inc.**, 104 Nebraska St., Pine Bluff, Ark., CA $1,664,122, surf. and constr. 2 bridges, 11 mi., Hy. 55 between Gilmore and Bardstown, Lake David-Bardstown, Crittenden and Mississippi Counties; CA $716,787, surf. 2.747 mi., Texarkana-Little Rock interstate road from U. S. Hy. 67 interchange to Hot Springs Hy. interchange, Saline Co.;

Ark.—**W. R. Fairchild, Inc.**, 49 N. Bypass, Box 31, Hattiesburg, Miss., CA $373,646, surf. 3.513 mi. and 1 bridge, Dermott-Halley Rd., Hy. 65, Chicot Co.;

Ark.—**L. S. Company, Inc.**, Lake Village, Ark., CA $257,139, surf. 8.946 mi., Hamburg-Parkdale Rd., Hy. 8, Ashley Co.;

Ark.—**Southeast Constr Co., Inc.**, 127½ Main St., Pine Bluff, Ark., CA $185,930, surf. 5.655 mi., Decatur-Centerton Rd., Hy. 102, Benton Co.;

Ark.—**Forsgren Brothers**, 3023 N. 23 St., Fort Smith, Ark., CA $366,723, addnl. section frontage roads, incl. 4 bridges on US Hy. 67-70 between Little Rock and Benton, Saline and Pulaski Counties. Grand total $3,564,347. Bids Jan. 28, awarded Jan. 29.

C. H. Burns & Sons, 7935 Hume Dr., Dallas, Tex., CA Est. $70,000, earth site preparation, IRVING, TEX. Wyatt Food Stores, 6100 Cedar Springs Rd., Dallas, Tex. Theodore H. Stueber, 5410 McComas St., Dallas, Tex., proj. archt.; W. L. Ziegler & Assocs., 5410 McComas St., Dallas, Tex., engrs.

COLORADO—State Hy. Dpt., 4201 East Arkansas, Denver,

Pioneer Constr. Co., 29 Lane Hy. 96, Pueblo, Colo., CA $271,336, est. $294,000, grading, structures, plant mixed asph. surf. 3.44 mi., Colorado Proj. No. S 0034 (6), Weld and Larimer Counties. Bids Feb. 3. CD 6-17.

BUILDINGS—LB & CA

▲ **J. E. Dunn Constr. Co.**, 929 Holmes St., Kansas City, Mo., CA $8,900,258, Wayne Miner HOUSING, KANSAS CITY, MO., Kansas City Housing Auth., 1220 Independence Ave., Kansas City, Mo. Bids Dec. 3. CD 12-8, under LB.

Commercial Metals Co., 6001 Dondo St., Houston, Tex., Owner Builds, $200,000, PLANT expan., HOUSTON, TEX. CD 2-5.

▲ **B&W Realty Co.**, 7935 Hume Dr., Dallas, Tex., CA Est. $2,250,000, 1 story, 281,781 sq. ft. steel, brick FOOD STORAGE DISTR. CENTER, 59.29 acre site, 6½ acres under one roof, IRVING, TEX. Wyatt Food Stores, 6100 Cedar Springs Rd., Dallas, Tex. Theodore H. Stueber, 5410 McComas St., Dallas, Tex., archt.

Southern Engineering Constr. Co., 4016 Mt. Vernon St., Houston, Tex., LB $589,450, JUNIOR HIGH SCHOOL addn., SPRING BRANCH, TEX., Spring Branch Ind. School Dist., 9000 Westview St., Houston, Tex. Bids Jan. 29. CD 12-15.

▲† **Glasgow Constructors (Joint Venture)**, c/o Beacon Constr. Co., 102 Hano St., Boston, Mass., LB $7,196,800 (6 bidders) 460 family HOUSING UNITS, Glasgow Air Force Base, GLASGOW, MONT. Base Procurement Office, Glasgow Air Force Base, Glasgow, Mont. Bids Jan. 28. CD 1-22.

▲ **Lembke Constr. Co.**, Box 771, Colorado Springs, Colo., LB $1,079,720, est. $1,000,000, 6 ELEMENTARY SCHOOLS, Boone, North Mesa, Vineland, Rye, Baxter, and Beulah, PUEBLO, COLO. School Dist. No. 70, 29 Lane and Gale Rd., Pueblo, Colo. Kenneth J. Stines, 222 S. Victoria Ave., Pueblo, Colo., archt.; Earl Heckman, 1654 Grant, Denver, Colo., engr. Bids Jan. 29. CD 1-28.

Lluts Constr. Co., 700 Chester, Pueblo, Colo., LB $540,000, est. $500,000, 1 story, 62 x 214 ft. SCHOOL, Rye; 1 story, 62 x 102 ft. SCHOOL, Baxter; 1 story, 62 x 177 ft. SCHOOL, Beulah (Pueblo, Colo.)

Dillon Constr. Co., 325 South Main, Pueblo, Colo., LB $549,100, est. $500,000, 3 elementary SCHOOLS, each 1 story, 104 x 206 ft., 104 x 178 ft. and 114 x 260 ft., Boone, North Mesa, Vineland (Pueblo, Colo.)

FAR WEST

HEAVY CONSTRUCTION—BA

† Utah—BA 3-3—Bureau Reclamation, Dpt. Interior, Ogden, access road and irrigation ditch removal, existing fences; furnishing, erecting barbed wire fencing for Willard Reservoir Area, Weber Basin Proj., Spec. 400C-128. CD 9-16-57.

▲ Calif., Los Angeles—BA 3-6—Los Angeles County Flood Control Dist., 2250 Alcazar St., Storm Drain Proj. 55, Nichols Canyon Rd. Storm Drain, $1,288,100. CD 11-10.

BUILDINGS—BA

▲ Calif., Pacoima—HOSPITAL—BA 3-2—Pacoima Memorial Hospital, c/o Daniel, Mann, Johnson & Mendenhall, archts., 3325 Wilshire Blvd., Los Angeles, 2 and 3 story hospital, bids $1,500,000.

HEAVY CONSTRUCTION—LB & CA

† **City Electric, Inc.**, Anchorage, Alaska, CA $143,609 (4 bidders), alarm systems, Army Nike Bases, Inv. 59-52, ALASKA, U. S. Eng., Anchorage, Alaska. Bids Jan. 28.

† **Olsen Constr. & Engineering Co.**, 3231 Kelsel Ave., Ogden, Utah, CA $561,236, earthwork, pipe lines and structures for trunklines 1-9, P-3-7 and P-20-5 and East Layton, East Sand Ridge, West Sand Ridge and Val Verda Pumping plants, Weber Basin Proj.; Spec. DC-5048, UTAH, Bureau Relamation, Dpt. Interior, Ogden, Utah. Bids Dec. 16, awarded Jan. 28. CD 12-22, under LB.

WASHINGTON—State Hy. Comm., Ernest J. Ketchum, chm., Olympia. Bids opened 2/3.

N. A. Degerstrom, E. 15-32 Ave., Spokane, Wash., LB $424,351 (22 bidders), draining, grading 11 mi. Primary St. Hy. 11, Franklin Co. line to Hedricks-Coleman Rd., Adams Co. CD 1-19.

J. Peterson, 205-4 St., Hoquiam, Wash., LB $165,130 (5 bidders), 35x75 ft. concrete swimming pool and 75x115 ft. masonry bathhouse, HOQUIAM, WASH. City, City Hall, Hoquiam, Wash. Bids Feb. 2. CD 9-24, under LB.

W. B. Questad, Inc., White-Henry-Stuart Bldg., Seattle 1, Wash., CA $255,373 (13 bidders), 155x240 ft., masonry maintenance shop, East Waterway, property at E. Marginal Way between Hinds and Horton Sts., SEATTLE, WASH. Port of Seattle, Bell St. Terminal, Seattle 1, Wash. Bids Feb. 3. CD 1-22.

▲ CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles. Bids opened 2-5.

Calif.—**E. L. Yeager**, 1995 Aqua Nansa Rd., Riverside, Calif., LB $1,430,306 (6 bidders), 1.9 mi. 4-lane expressway U. S. Hy. 70-99 between 0.2 mi. and 2.4 mi. east of Redlands, incl. frontage roads, access ramps and bridge to carry Yucaipa Blvd. over Expressway, V111-S.B. SBD. 26, B, San Bernardino Co. CD 1-7.

(continued on page 208)

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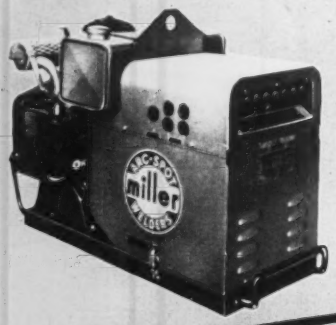

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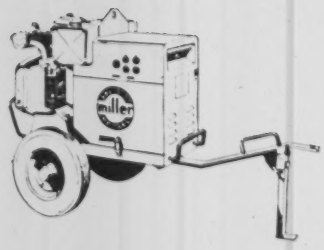

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NAME

TITLE

ORGANIZATION

ADDRESS

CITY STATE

(Continued from page 206)

Calif.—Webb & White & Potashnick, 616 W. 17th St., Los Angeles, Calif., LB $6,272,689 (joint venture) (11 bidders), grading, paving 3.7 mi. Long Beach Freeway (State Sign Rte. 15) 6 lane and 13 structures between 0.1 mi. south of Santa Ana Freeway and 0.2 mi. north of San Bernardino Freeway, V11-LA-167, 166, 26-B, C, Monp, LA, D, ALH, Los Angeles Co. CD 1/2.

Van Valkenburg & Sons, 1627 Chico Ave., El Monte, Calif., CA $716,625, Valley Outfall relief sewer, Unit 1, Section B-C, LOS ANGELES, CALIF. City, 153 City Hall, Los Angeles, Calif. Bids Jan. 28, awarded Jan. 30. CD 2/2, under LB.

▲ Winston Bros. Co. & Greene Constr. Co., 1532 California Ave., Monrovia, Calif., LB $7,583,866 (9 bidders), enlargement Mathews Dam and Dike near Riverside, LOS ANGELES, CALIF. Metropolitan Water Dist. of Southern California, 306 W. 3rd St., Los Angeles, Calif. Bids Feb. 4. CD 12/30.

▲ Hoffman Constr. Co., 715 S.W. Columbia St., Portland, Ore., CA $5,396,000, exposition recreation center, PORTLAND, ORE. Exposition-Recreation Comn., Park Bldg., Portland, Ore. CD 2/2, under LB.

BUILDINGS—LB & CA

J. H. Sellen Constr. Co., 228 9 Ave. N., Seattle, Wash., LB $323,933 (5 bidders), APPLIED PHYSICS LABORATORY alterations, SEATTLE, WASH. Boeing Airplane Co., 7755 E. Marginal Way, Seattle 4, Wash.

J. B. Sooy, Box 110, Redlands, Calif., LB $787,000 (7 bidders) 1 story, frame, stucco Colton HIGH SCHOOL addn., COLTON, CALIF. Colton School Dist., Colton, Calif. Bids Jan. 30. CD 1/15.

Carter Constr. Co., 2975 Wilshire Blvd., Los Angeles, Calif., CA $720,000, concrete MEDICAL OFFICE, 11600 Wilshire Blvd., LOS ANGELES, CALIF. West Wilshire Medical Center, 2975 Wilshire Blvd., Los Angeles, Calif.

▲ Calbro, Inc., P.O. Box 877, Paramount, Calif. Owner Builds, $1,423,400, 120 DWELLINGS, Crete Dr., Coalbank Dr., DeAlcala Dr., Burgess Dr., Valida Dr., Fuerta Dr., NORWALK, CALIF.

▲ Gardenhill, Inc., P.O. Box 877, Paramount, Calif. Owner Builds, $1,301,850, 121 frame, stucco DWELLINGS, Manza Dr., Swift Dr., Ostend Dr., Foster Rd., Starlette Dr., NORWALK, CALIF.

Wesley Constr. Co., 2105 N. Edwards St., El Monte, Calif., LB $402,529 (18 bidders), frame, stucco Hargitt SCHOOL, NORWALK, CALIF. Norwalk-La Mirada School Dist., 12820 S. Pioneer Blvd., Norwalk, Calif. Bids Feb. 3. CD 1/15.

Paul R. Bousen, P.O. Box 58, Oceanside, Calif., CA $556,000, 46 DWELLINGS, Canyon Dr., Lancelot Dr., Foster Dr. and Foussat St., OCEANSIDE, CALIF. Rolling Hills Estates, P.O. Box 58, Oceanside, Calif.

Chas. C. Richardson Constr. Co., Box 17008, La Jolla, Calif., CA $476,700, 37 frame, stucco DWELLINGS, Mt. Alamgosa Dr. and Mt. Alamgosa St., Mt. Blackburn Ave., Mt. Blanca Dr., SAN DIEGO, CALIF. Unit 7 Partnership, Box 392, La Jolla, Calif.

Beatty Bros., 1625 N. Durant St., Santa Ana, Calif., LB $532,900 (7 bidders), Columbus-Tustin Intermediate SCHOOL, AUSTIN, CALIF. Tustin Elementary School Dist., Tustin, Calif. Bids Jan. 30. CD 1/23.

CANADA

HEAVY CONSTRUCTION—LB & CA

Swanson Constr. Co. Ltd., 1361 Erin St., Winnipeg, Man., CA Est. $110,350 (7 bidders), 500,000 gal. water storage reservoir and pumphouse, PORTAGE LA PRAIRIE, MAN. City of Portage La Prairie, City Hall, Portage La Prairie, Man. Bids Jan. 21, awarded Jan. 26.

BUILDINGS—LB & CA

C. A. Johannsen & Sons Ltd., 51 Young St., Ottawa, Ont., CA Est. $850,000 (15 bidders), 1 story, 80x500 ft., steel, concrete SHOPPING PLAZA, Eastview, OTTAWA, ONT. McArthur Shopping Plaza Ltd., 63 Sparks St., Ottawa, Ont. Bids Jan. 28, awarded Feb. 2. CD 1/13, under Foster Business Services Ltd., 64 Sparks St., as owner.

Stedman Bros. Ltd., 136 Portland St., Toronto, Ont., cancelled bids to have been opened Dec. 23, 2 story, bsmt., 82,000 sq. ft., steel, brick, block WAREHOUSE addn., concrete paved fdns., TORONTO, ONT. Est. $500,000. CD 12/22.

▲ Omega Constr. Co. Ltd., 6555 Cote des Neiges Rd., Montreal, Que., CA Est. $2,000,000, 11 story OFFICE, indoor parking, air conditioning, Sherbrooke St. W. and Bishop St., MONTREAL, QUE. Greater Montreal Development Corp., 1410 Stanley St., Montreal, Que. Peter Dickinson & Assocs., 1390 Sherbrooke St. W., Montreal, Que., archts.

PROPOSED PROJECTS

WATER SUPPLY

Fla., Cocoa—City, City Hall, WW imprvs., $700,000. Gee & Jensen, 109 Church St., consult. engrs.

▲ Fla., Clearwater—Bd. Comrs., Pinellas Co. Courthouse, County Water System extens., $2,000,000. Black & Assocs., Inc., 700 SE 3 St., Gainesville, consult. engr.

▲ Ill., Bridgeview—Village of Bridgeview, Village Hall, water supply and distr. sys., $1,000,000. Walter Wilson & Assocs., 105 W. Madison St., Chicago, consult. engrs.

Ill., Deerfield—Village, 850 Waukegan Rd., elevated water tank, water main extens., $545,000.

▲ N. Y., East Greenbush—Town, Town Hall, Proj. No. N.Y.30-P-3025, water sys., $1,200,000.

N. C., Hickory—City, City Hall, WW imprvs., $593,000.

S. C., Walhalla—Bd. Comrs., Oconee Co. Courthouse, water sys. imprvs. Over $500,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs.

▲ Tex., Terrell—City, City Hall, water distr. lines, $1,200,000; water filtration plant, $600,000. Forrest & Cotton, 600 Vaughn Bldg., Dallas, consult. engrs. CD 7/9.

SEWERS, WASTE DISPOSAL

▲ Ala., Birmingham—City, City Hall, sewerage system imprvs., $7,000,000 (no funds). Harry Hendon & Assocs., 10 Office Park Circle, consult. engrs. CD 5/22/57.

Ala., Birmingham—Bd. Comrs. Jefferson Co., Courthouse, Five Mile Creek Trunk Sewer, $500,000.

▲ Calif., Santa Ana—Orange Co. Sanitation Dist. 7, 1104 W. 8th St., $2,230,000 bond election Mar. 10, sewers.

Conn., Hartford—Metropolitan Dist., 115 Broad St., Hartford, sanitary sewer, 16,100 ft., Cottage Grove Rd. Area, from Beeman's Brook Trunk Sewer near Cottage Grove Rd., easterly to Tyler St., incl. Lincoln Ter., Cottage Grove Circle, Rockwell Ave., Rosewood Lane, etc., Bloomfield, $410,471.

Fla., Cocoa—City, City Hall, sanitary sewer imprvs., $500,000. Gee & Jensen, 109 Church St., consult. engrs.

▲ Ill., Chicago—Dpt. Purchases, City Hall, main drain, South Rte. Expressway, $650,000. pumping station, Roosevelt Rd., South Rte. Expressway, $350,000. pumping station, South Rte. Expressway, Pershing Rd., $180,000. Dick Van Gorp, 320 N. Clark St., staff engr. Bids 1959.

Ill., Elmhurst—City, 104 S. Kenilworth Ave., sewage treatment plant, $700,000. Baxter & Woodman, 68 N. Williams St., Crystal Lake, consult. engrs.

▲ Ky., Shively—City, sewerage sys. and sewage treatment plant, $4,500,000. J. Stephen Watkins & Robert E. Martin, Preston Hy., Louisville, engrs. Bids about May 28. CD 2/14.

▲ N. J., Woodbridge—Twp. of Woodbridge, sewers in Iselin and Colonia sections, $1,000,000. John Boffa, 75 West St., New York, N. Y., consult. engr.

▲ N. Y., Brighton—Town, sanitary sewer extensions in Sewer Districts 1, 3, 4 and 5, $1,000,000. CD 6/7/54.

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N. C., Graham—City, City Hall, sanitary sewer imprvs, $850,000.

N. C., Hickory—City, City Hall, sanitary sewer imprvs, $692,000. CD 11-7-55.

N. C., Raeford—City, City Hall, sewage disposal plant, $450,000. Moore-Gardner & Assocs., 514 S. Fayetteville St., Asheboro, consult. engrs.

▲ Pa., Berwyn—Tredyffrin Twp. Comrs., Berwyn, Eastern Sewer Dist., Sanitary Sewerage Collection Sys., $2,395,797. Yerkes Engineering Co., 101 Charles Dr., Bryn Mawr, consult. engrs. Constr. January 1960. CD 5-5-54.

Tenn., Nashville—Hermitage Hills Corp., c/o J. R. Wauford & Co., engrs., 2835 Lebanon Rd., Donelson, sewage collection sys., $475,000; sewage treatment plant, $200,000. Hermitage Hills Subdivision. Bids in March.

Tenn., Newport—City, City Hall, sewage disposal plant, $500,000. Glen Shults, Newport, staff engr.

Tex., Nederland—City, City Hall, voted bonds Jan. 27, sewage plant renovation and new unit, $200,000; sanitary sewer lines, $562,000. CD 1-7.

Wash., Seattle—Lake City Sewer Dist., 12721 30 Ave. N.E., Zone 55, sewers in Sheridan and Briarcrest residential areas north of E. 145 St. to vicinity of Ballinger Way, $925,000. Hill & Ingram, 3104 Western Ave., Zone 1, consult. engrs. CD 11-29-57.

BRIDGES

Calif., Menlo Park—City, City Hall, bond election Apr. 14, Willow Rd. Underpass, $600,000. CD 1-30-57.

▲ Ill., Aurora—City, 15 Fox St., 2 bridges over Fox River, $1,553,050.

Ill., Park Forest—Village, Village Hall, 2 underpasses, paving Orchard St. under Elgin, Joliet & Eastern R.R., Michigan Central Dr., $850,000. A. Epstein & Sons, Inc., 2011 W. Pershing Rd., Chicago, consult. engr.

N. C., Hickory—City, City Hall, underpass, eastern section of city, $530,000.

O., Newark—City, City Hall, replacing 4 bridges, $600,000.

STREETS AND ROADS

▲ Ill., Chicago—Dpt. Purchases, City Hall, grading, paving Northwest Expressway, Ogden Ave. to Division St., $2,400,000.
grading, paving Northwest Expressway, Division St. to North Ave., $1,750,000.
grading, paving Northwest Expressway, North to Armitage Aves., $900,000.
grading, paving Northwest Expressway, Fulton to Hubbard Sts., $700,000.
grading, paving concrete ramp structures, Northwest Expressway, Lexington to Van Buren Sts., $3,600,000. CD 2-13-45.
grading, paving South Rte. Expressway, Lexington to Maxwell Sts., $1,930,000.
structural steel elevated hy., South Rte. Expressway, 16th to Maxwell Sts., $4,500,000.
elevated hy., South Rte. Expressway, 16th St. to Chicago River, $9,100,000.
elevated hy., South Rte. Expressway, Chicago River to 28 Pl., $11,100,000. CD 6-21-57.
paving, reconstr., Outer Dr., Oak St. to 14 St., $4,000,000.
grading, paving, drainage, lighting and structures, Stony Island Ave., $7,000,000. Dick Van Gorp, 320 N. Clark St., staff engr.

▲ N. J., Somerville—Bd. Freeholders Somerset Co., elevation and widen Weston cutoff between Rte. 28 and Weston Canal Rd., Franklin-Somerville Area, Franklin Twp., $2,000,000. Donald Stires, Court House, co. engr.

▲ Tenn., Clarksville—Clarksville Housing Auth., curbs, gutters, streets and sidewalks for Gallows Hollow Urban Renewal Proj., $1,000,000. Speight & Hibbs, 103 Public Square, consult. engrs.

EARTHWORK, WATERWAYS

▲ Conn., Bloomfield and West Hartford—Greater Hartford Flood Control Comm., 11 Asylum St., Hartford, 3 floodwater retarding structures North Branch of Park River, $1,898,640. CD 8-13-57, under Conn., Bloomfield.

▲ Ill., Chicago—Chicago Regional Port Auth., 360 N. Michigan Ave., truck terminal, Lake Calumet Harbor, $3,000,000. Bids about Apr. 1. CD 1-26-54.

AIRPORTS

▲ Conn., Windsor Locks—RUNWAYS—State P. Wks. Dpt., 165 Capitol Ave., Hartford, extending runways, Bradley Field, $1,000,000. John J. Mozzochi & Assocs., 265 Hebron Ave., Glastonbury, consult. engrs. strengthening runways, Bradley Field, $1,000,000. Bids in 1959. Goodkind & O'Dea, 1214 Dixwell Ave., Hamden, consult. engrs. CD 1-19.

Wash., Pasco—TERMINAL, etc.—City, City Hall, terminal and imprvs., runways at airport, $500,000. G. Fisher, City engr.

Wis., Marshfield—AIRPORT IMPRVS.—City, City Hall, airport imprvs., $400,000. Perry-Carrington Eng. Co., 349 S. Central St., consult. engrs. Bids in April. CD 11-8-56.

PUBLIC BUILDINGS

▲ Ala., Fairfield—HOUSING—Fairfield Housing Auth., plans by Caldwell & Elliott, 2227 20 Ave. S., Birmingham, 200 housing units, $2,000,000.

▲ Ala., Florence—DORMITORY, etc.—Florence State Teachers College plans by Northington, Smith & Kranert, 1949 Florence Blvd., dormitory, $500,000; student union bldg., $500,000. CD 4-10.

▲ Calif., Al Tahoe—SCHOOL—Lake Tahoe Unif. School Dist., Box 217, Al Tahoe, voted bonds Jan. 27, high school addn., elementary school addn., $1,500,000. CD 4-7-52.

Calif., Buena Park—SCHOOL—Buena Park School Dist., $450,000 bond election Mar. 17, 8th St. School. CD 1-25-57.

Calif., Fallbrook—SCHOOL—Fallbrook Union High School Dist., $450,000 bond election May 19, Junior High School.

Calif., Goleta—SCHOOL—Goleta Union School Dist. of Santa Barbara County, voted $500,000 bonds Jan. 27, school. CD 1-15.

Calif., Grossmont—SCHOOL—Grossmont Union High School Dist., Grossmont, $500,000 bond election May 19, school. CD 11-6-57.

Calif., Los Angeles—SCHOOL—Bd. Educ., 1425 San Pedro St., plans by Harry T. MacDonald, 3625 W. Slauson Ave., school, Shoup Ave. and Burbank Blvd., Woodland Hills, $450,000. CD 6-9.

▲ Calif., Oxnard—SCHOOLS—Oxnard Elementary School Dist., 225 Palm Ave., $1,500,000 bond election Apr. 7, schools. CD 12-10-54.

Calif., Roseville—SCHOOL—Roseville Jt. Union High School Dist., bond election Mar. 31, Roseville High School Addn. $575,000. CD 8-27-53.

Calif., San Mateo—POLICE—City, City Hall, bond election Apr. 7, police bldg., $870,000. CD 3-27.

Calif., Simi—SCHOOL—Simi Valley Unif. School Dist., voted $914,000 bonds Jan. 27, school.

Calif., Wheatland—SCHOOL—Wheatland Union High School Dist., P.O. Box 498, bond election May 19, high school, Pinkerman Subdivision. $900,000.

▲ Colo., Denver—SCHOOLS—School Dist. No. 1, 414 14 St., plans by C. Gordon Lee, 1031 19 St., grade school, West Jewell Ave. and S. Yates, $600,000; and grade school, E. 32 and Colorado Blvd., $600,000. Plans by Robert F. Limtedt, 625 W. 14 Ave., grade school, E. Virginia and Oneida, $500,000. CD 12-8-55.

Conn., Berlin—SCHOOL—Town, Town Hall, plans by Shorer & Salisbury, 1007 Farmington Ave., West Hartford, high school addn. $500,000. CD 4-22-57.

Conn., Greenwich—HOSPITAL—Town, Town Hall, plans by Eggers & Higgins, 100 E. 42 St., New York, N. Y., Nathaniel Witherell Hospital addn., $550,000. CD 10-23-56.

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Conn., Milford—SCHOOL—Town, Town Hall, plans by Jesse J. Hamblin, 1188 Main St., Bridgeport, East Elementary School, Baxter Lane, $600,000. CD 3-8-57.

Ga., Lithonia—HOUSING—Lithonia Housing Auth., Lithonia, housing units, $598,000.

▲ Ill., Chicago—SCHOOLS—Bd. Educ., 228 N. LaSalle St., Dixie School addn., 2641 Calumet Ave., $900,000. LaSalle Elementary School, 326 W. Engenie St., $700,000. Otis School addn., 625 N. Armour St., $500,000. Phillips School addn., 3831 Prairie Ave., $750,000. Smyth School, 1059 W. 14 St., $600,000. school, 21 St. and Central Park Ave., $1,250,000. Bids in 1959. J. C. Christiansen, 228 N. LaSalle St., engr. CD 6-11-57.

▲ Ill., Chicago—SCHOOL—Bd. Educ., 228 N. LaSalle St., plans by John C. Christiansen, 228 N. LaSalle St., Waller High School rehabilitation, 2039 Orchard St., $1,250,000. CD 6-11-57.

▲ Ill., Evanston—LIBRARY—Evanston Library Bd., 1703 Orrington Ave., voted bonds Jan. 27, library, Orrington Ave. and Davis St., $1,375,000. CD 12-17.

Ill., Kenilworth—SCHOOL—Bd. Educ., 542 Abbotsford St., bond election Mar. 7, Joseph Sears School expansion, $500,000.

Ill., North Chicago—SCHOOL—Bd. Educ., 574 McAlister St., plans by Nicol & Nicol, 23 E. Jackson Blvd., Chicago, Zone 4, school, $600,000.

Ill., Plainfield—GYMNASIUM—School Dist. 202, 701 Division St., plans by Berger Kelley & Assocs., 44 Main St., Champaign, high school gymnasium, $495,000.

▲ Ill., Rockford—SCHOOL—Rockford Bd. Educ., 201 S. Madison St., plans by Hyland & Hubbard, Gas Electric Bldg., Constr., 192,000 sq. ft. High School, Auburn, $3,100,000. CD 9-19-56.

Ill., Shelbyville—NURSING HOME—Bd. Supervs. Shelby Co., Court House, defeated $600,000 bonds Jan. 20, county nursing home. CD 11-21-24.

Kan., Emporia—DORMITORY—State, Bd. Regents, Topeka, Proj. Kan. 13-CH-49D, women's dormitory, State Teachers College, $500,000.

Me., Eastport—SCHOOL—School Admin. Dist., Towns Eastport, Perry, Pembroke and Dennysville, City Mgr. Eastport, area high school, $600,000. Constr. 1959-1960.

▲ Mass., Amherst—ENGINEERING AND SERVICE etc.—Commonwealth of Mass., Dpt. Educ., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, plans by William W. Drummey, 80 Boylston St., Boston, U-59-6, engineering and service bldg. for Experimental Station, $1,300,000; plans by Campbell & Aldrich, 87 Newbury St., Boston, U-59-5, classrooms and offices, $1,071,000, for University of Massachusetts. Constr. 1959.

Mass., Amherst—FOOD TECHNOLOGY—Commonwealth of Mass., Dpt. Educ., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, plans by S. S. Eisenberg, 739 Boylston St., Boston, U-59-3 food technology bldg. addn., University of Massachusetts, $900,000. Constr. 1959.

▲ Mass., Boston—STATE OFFICE—State Office Bldg. Assoc., 80 Boylston St., plans by W. Chester Browne & Assoc., 184 Boylston St., and Desmond & Lord, 6 Beacon St., assoc. archts., state office, Ashburton Pl., Somerset, Cambridge and Bowdoin Sts., $30,000,000. Howard, Needles, Tammen & Bergendoff, 99 Church St., New York, N. Y., site engrs. Deceuninck & Brill, 361 Boylston St., traffic engrs. Shurcliff & Merrill, 214 Beacon St., landscape archts. Emory Roth & Sons, 400 Park Ave., New York, N. Y., consult. archts. CD 5-27-53.

▲ Mass., East Longmeadow—SCHOOL—Town Supt. Schools, 50 Harkward Hill, plans by Alderman & MacNeish, 594 Riverdale St., West Springfield, Senior High School, Maple St., $3,000,000. CD 11-20-56.

▲ Mass., Fitchburg—ADMINISTRATION—Commonwealth of Mass., Dpt. Educ., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, plans by Samuel Glaser & Assoc., 234 Clarendon St., Boston, E-59-18, administration bldg., State Teachers College, $1,042,000. Constr. 1959.

Mass., Lowell—ADMINISTRATION, etc.—Commonwealth of Mass., Dpt. Educ., Div. Bldg. Constr., 38 Chauncy St., Boston, plans by W. Chester Browne & Assoc., 184 Boylston St., Boston, E-59-22, administration, library and classroom bldg., State Teachers College, $850,000. Constr. 1959.

Mass., Medfield—POWER PLANT, etc.—Commonwealth of Mass., Dpt. Mental Health, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, M-60-1R, power plant, and utilities distr., State Hospital, $500,000. R. D. Kimball Co., 6 Beacon St., Boston, engr. Constr. 1959.

▲ Mass., Needham—SCHOOL—Town Supt. Schools, 1330 Highland Ave., Junior High School, Great Plain and Central Aves., $1,000,000. Constr. 1959.

Mass., Waltham—SOCIAL SCIENCE—Brandeis University, 415 South St., plans by The Architects Collaborative, 63 Brattle St., Cambridge, social science, Campus, $750,000. Harrison & Abramovitz, 650 Fifth Ave., New York, N. Y., consult. supervising archts. Bids April-May, 1959.

▲ Mass., Winchendon—SCHOOL—Town Supt. Schools, plans by Perley F. Gilbert & Assoc., Inc., Sun Bldg., Lowell, Junior-Senior High School, Murdock Ave., $1,700,000. CD 2-10.

Miss., Meridian—AUDITORIUM—City Comrs., plans by Bd. Arch., 410 23rd Ave., 1 story, brick and terrazzo, $750,000.

▲ Mont., Great Falls—LIBRARY—City, City Hall, library, $1,021,680.

▲ N. H., Concord—SCHOOL—City, School Dpt., Parker School Bldg., plans by Alonzo J. Harriman, Inc., 292 Court St., Auburn, Me., high school addn., alterations, $1,200,000. CD 6-14-57.

▲ N. H., Keene—SCHOOLS—City, Union School Dist., plans by John R. Holbrook, 37 Main St., Junior High School, $1,200,000. CD 12-9-57, plans by Alonzo J. Harriman, Inc., 292 Court St., Auburn, Me., secondary school constr., $400,000. Constr. late 1959.

N. H., Manchester—HEALTH CENTER—State New Hampshire Dpt. Pub. Wel. & Hyg., State House, Concord, Community Mental Health Center, near Nashua Line, $500,000. Constr. 1959-1960.

N. J., Teaneck—SCHOOL—Bd. Educ., Twp. of Teaneck, Hawthorne School addn., Washington Irving School addn., $700,000.

N. J., Toms River—JUNIOR COLLEGE—Bd. Freeholders, Ocean Co., Junior College, Cassville, Over $750,000.

▲ N. J., Woodbury—SCHOOL—West Deptford Bd. Educ., high school, $2,350,000. Mickewright & Mountford, 90 E. Stuyvesant St., Trenton, archts. CD 6-18.

▲ N. Y., Brooklyn—HOUSING—New York City Housing Auth., 299 Broadway, New York, Zone 7, 750 apartment, two blocks between Sumner and Stuyvesant Aves., between Pulaski St. and Dekalb Ave., plus eastern third of block bounded by Sumner, Dekalb and Lewis Aves., and Kosciusko St., $13,385,000. (federal).

▲ N. Y., Brooklyn—HOUSING—New York City Housing Auth., 299 Broadway, New York, Zone 7, 560 apartment, Prospect Expressway Area, between 14th and 20th Sts. extending from 8th to 10th Aves., $10,375,000. (state).

▲ N. Y., Maine—SCHOOL—Maine-Endwell Central School Dist., plans by Walter Brown, Capital Theatre Bldg., Binghamton, Senior High School, $3,000,000.

▲ N. Y., New York—HOUSING—New York City Housing Auth., 299 Broadway, Zone 7, 600 apartment, Eden Terrace-Boston Rd. area bounded by Crawford, Palmer, Needham, Dyre, Varian and Platt Aves., and Eden Terrace, Bronx, Boro., $9,600,000. (federal).

▲ O., Dayton—LIBRARY—Dayton Public Library, 3 mill tax levy to be voted Nov. 3, public library, $2,400,000. Freeman A. Pretzinger, Reibold Bldg., archt. CD 8-6.

O., Reynoldsburg—SCHOOL—Reynoldsburg School Dist., voted $541,000 bonds Jan. 27, elementary school. CD 12-4.

Okla., Durant—DORMITORY, etc.—Bd. of Regents, Capitol, Oklahoma City, 84 men's dormitory, 24 family apartments (Okla. 60-CH-19D), Southeastern State Teachers College, $498,600. CD 1-18-57.

(Continued on page 213)

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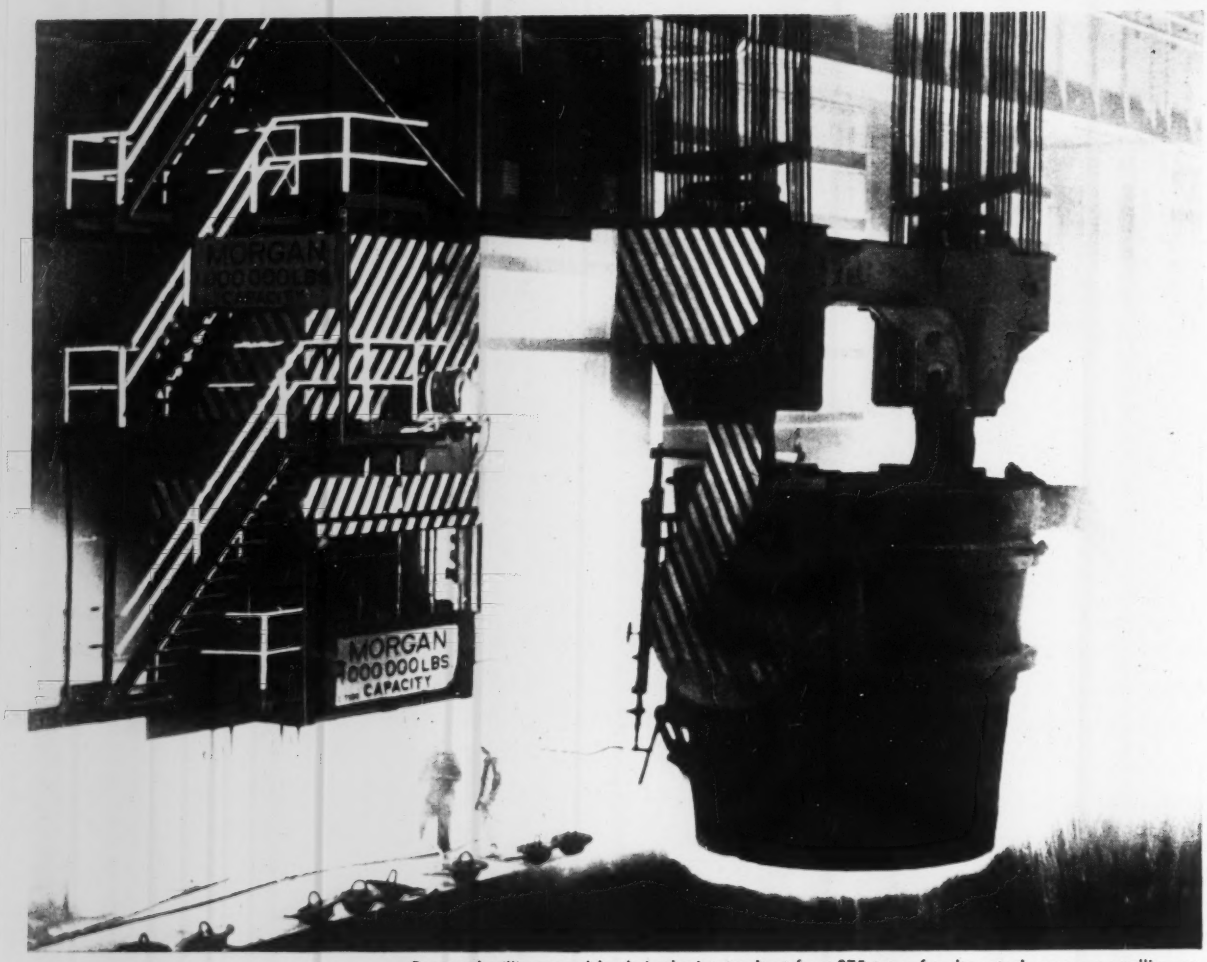

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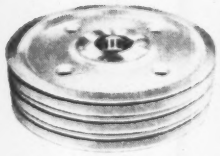

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(Continued from page 210)

▲ Pa., Doylestown — SCHOOL — Central Bucks County School Dist., Doylestown, plans by Micklewright & Mountford, Morrisville, Junior High School, Rte. 611, $1,000,000. Bids in March.

▲ S. C., Anderson—SCHOOL—Anderson School Dist. 5 Courthouse, Watson Junior High School, $1,000,000.

S. C., Lancaster—SCHOOL—Lancaster Co. Bd. Educ., Courthouse, plans by Lockwood-Greene Engineers, Inc., Montgomery Bldg., Spartanburg, Lancaster Junior High School reconstr., $500,000.

▲ Tenn., Memphis — POLICE HEADQUARTERS — City, City Hall, police headquarters addn., Washington St., $1,500,000.

▲ Tex., Conroe—SCHOOLS—Conroe Ind. School Dist., defeated bonds Jan. 24, high school, $1,975,000; Junior High School addn., $400,000; elementary school SE section of city, $400,000. CD 1-15.

R. I., Tiverton—SCHOOL—Town, Town Hall, high school, $750,000. Constr. 1960.

Wash., Ephrata—SCHOOL—School Dist. 165, plans by W. & D. Rothe, 807 W. Yakima Ave., Yakima, Junior High School, $492,000. CD 6-24-57.

Wash., Leavenworth—SCHOOL—School Dist. 128, defeated $213,000 bond issue and $100,000 special levy Jan. 15, high school, $600,000. CD 11-28-.

Wash., Tumwater—SCHOOL—School Dist. 333, plans by E. L. Mills & Assocs., 308 S. Tacoma Ave., Tacoma, high school, $815,000. CD 11-12.

Ont., St. Thomas—COLLEGIATE—Central Elgin Dist. High School Bd., plans by J. Fred Green, 544 Talbot St., 2 story, 110,000 sq. ft. Central Elgin Collegiate Institute addn., $600,000.

▲ Sask., Saskatoon—COLLEGIATE—Saskatoon Collegiate Bd., Saskatoon, plans by Webster, Forrester & Scott, 209-213 CPR Bldg., collegiate at Riverdale, $1,400,000.

COMMERCIAL BUILDINGS

Ala., Mobile — DEPARTMENT STORE — Metzger Bros., Inc., 108 Dauphin St., 5 story department store, $500,000.

Ala., Ozark—HOUSING—Golden Years Terrace, Inc., c/o H. L. Holman, Jr., archt., Ozark, 75 unit housing for the elderly, $650,000.

▲ Ark., Little Rock—SHOPPING CENTER—University Plaza Center, Inc., c/o Donald H. Shandeling Assocs., 6505 Wilshire Blvd., Los Angeles 48, Calif., and 204 Louisiana St., Little Rock, plans by Dave Jacobson, 6505 Wilshire Blvd., Los Angeles 48, Calif., shopping center to be known as University Plaza Shopping Center, incl. 1,500 car parking area, Asher and Hayes Sts., $3,000,000.

▲ Calif., Chatsworth—DWELLINGS—Victoria Crest Co., 7807 Sunset Blvd., plans by Geiger-Sjoberg-Stephens, 141 S. Barrington Ave., 126 dwellings, Chatsworth Dist., $1,500,000.

Calif., Los Angeles—MUSIC AND SPEECH ARTS CENTER—Occidental College, 1600 Campus Rd., plans by Charles Luckman Assocs., 9220 Sunset Blvd., 2 story music and speech arts center, $600,000.

▲ Calif., Menlo Park—OFFICE—Stanford Research Institute, Stanford Village, plans by Stanton & Stockwell, 627 S. Carondelet St., Los Angeles, 110,00 sq. ft. office, $2,700,000.

▲ Calif., San Francisco—HOTEL, etc.—Ben Swigg, c/o Mario Gaidano, archt., 605 Washington St., Fairmont Hotel and garage, $3,000,000. CD 1-29-.

▲ Colo., Denver—HOSPITAL—General Rose Memorial Hospital, 9 and Cherry, plans by Berne, Muchow, Bourne & Pelvers, 1225 Bannock, hospital addns., alterations, $1,800,000.

Conn., West Hartford—STUDENT UNION—St. Joseph College, 1678 Asylum Ave., student union bldg., $500,000.

D. C., Wash.—HEADQUARTERS—United Brotherhood of Carpenters & Joiners of America, 1003 K St. N.W., plans by Holabird-Root & Burgee, 180 N. Wabash, Chicago, Ill., national headquarters bldg., Constitution Ave., Louisiana Ave. and 2 St. N.W., $500,000.

▲ Fla., Cocoa Beach—RESIDENCES—Edward Sweeny, Box 415 Riveria Beach, 164 residences, $1,000,000. Gee & Jensen, 109 Church St., Cocoa, consult. engrs.

Fla., Lake Worth—RESIDENCES—Walter Samuels, c/o John Adair, Jr., consult. engr., 421 S. H St., 38 residences, $500,000.

Ill., Arlington Heights—CHURCH, etc.—St. Peter Lutheran Church, 325 N. Highland Ave., plans by Stade, Dolan & Anderson, 819 Busse Hy., Park Ridge, church, grade school and gymnasium, $900,000.

▲ Ill., Chicago—CONFERENCE CENTER—University of Chicago, 5801 Ellis Ave., plans by Edward D. Stone, 38 E. 65 St., New York, N. Y., conference center, $3,500,000.

▲ Ill., Downers Grove—DORMITORY, etc.—Bethany Biblical Seminary, 3435 W. Van Buren St., Chicago, plans by Chas. Edw. Stade & Assocs. and M. Dolan & H. Anderson, 819 Busse Hy., Park Ridge, dormitory and apartment for Seminary on 55-acre site, Meyers and Butterfield Rds., $2,000,000.

▲ Ill., Elgin—MOTOR HOTEL—Owner, c/o Tschschmidt & Assocs., archts., 30 N. LaSalle St., Chicago, Zone 2, 200 room motor hotel, Rte. 20, near here, $2,000,000.

Ky., Berea—ALUMNI MEMORIAL—Berea College plans by Hartsteen, Louis & Henry, 504 S. 3d St., Louisville, Zone 2, 350,000 sq. ft. alumni memorial bldg., $700,000. E. R. Ronald & Assoc., 554 S. 3rd St., Louisville, Zone 2, consult. engrs.

▲ Ky., South Fort Mitchell (Covington)—SHOPPING CENTER—Edw. Schmidt Jr., 1210 Sunset, Kenton Hills, Covington, plans Harley Fisk, 19 E. Pike St., Covington, shopping center on 20-acre tract, north of Beechwood Rd., $1,500,000.

Mass., Cambridge—APARTMENT—Owner, c/o Raymond S. McLay, 8 Monadnock Rd., Arlington, 80 unit apartment, Memorial Drive between Akron and Hingham Sts., $500,000. Constr. 1959.

Mass., Falmouth—APARTMENT—Laura Baker, 402 Palmer Ave., plans by Koller Assoc., 198 Richardson Rd., Newton Upper Falls, apartment, Rte. 28 and Old County Rd., $500,000.

▲ Mass., Springfield—COLLEGE BLDGS., etc.—American International College, 170 Wilbraham Rd., plans by Wallace E. Dibble, 1618 Main St., college bldgs., field house, student activities center, auditorium, classroom and laboratory bldg., $2,000,000. Constr. 1959-1960.

▲ Mass., Worcester—APARTMENT—Harry W. Kimpex, 182 Prescott St., plans by Doak Martin, 8 Norwich St., 178 apartment house, Salisbury St., $2,000,000. Constr. 1959.

▲ Mich., Allen Park—SCHOOL—St. Frances Cabrini Parish, 15411 Wick St., plans by Charles D. Hannan, 32580 Grand River St., Framington, high school, $1,000,000.

▲ Mich., Detroit—ENGINEERING and ADMINISTRATION—Burroughs Corp., 6071 2nd Blvd., 2 story, 115 x 560 ft., brick, steel, glass engineering and administration bldg., Tireman Ave., $2,000,000.

▲ Minn., Mendota Heights—SHOPPING CENTER—Muske-Tansey Realtors, 918 Minnesota Bldg., St. Paul, Mendota Heights Shopping Center, TH 49, $1,000,000.

▲ Minn., Minneapolis—HOSPITAL—Northwestern Hospital, 810 East 27th St., plans by Ellerbe & Co., 333 Sibley St., St. Paul, 6 or 7 story hospital addn., $3,000,000. Constr. 1960. CD 3-13-57.

▲ Minn., St. Paul—OFFICE—Degree of Honor Protective Assn., 389 St. Peter St., plans by Bergstedt & Hirsch, 2707 West 7th Blvd., 4 story office, 1st Fourth St. and Cedar Ave., $1,000,000. CD 7-18-.

▲ Minn., St. Paul—SHOPPING CENTER—Palen Center, c/o C. G. Rein Co., 919 Selby Ave., St. Paul, 120,000 sq. ft. shopping center, Maryland-Prosperity Aves., $1,750,000.

▲ Mo., Kirkwood (St. Louis 22, P.O.)—HOSPITAL—St. Joseph Hospital, Sisters of St. Joseph, 525 Couch Ave., plans by Jamieson, Spear, Hammond & Grolock, 1876 Arcade Bldg., 812 Olive St., St. Louis, Zone 1.

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4 story, ground floor, basmt. hospital addn. $1,250,000.

N. J., Camden—SCHOOL OF NURSING, etc.—Our Lady of Lourdes, 1600 Haddon Ave., plans by Paul C. Reilly, 111 S. Ave., New York, N. Y., school of nursing and convent. Over $500,000. Purdy & Henderson Assocs., 1 Madison Ave., New York, N. Y., engrs. Bids in February. CD 3-12-57.

N. J., Lakewood—DORMITORY—Georgian Court College, Lake Dr., plans by Eggers & Higgins, 100 E. 42 St., New York, N. Y., dormitory. $750,000.

▲ N. J., Princeton—RESIDENTIAL DEVELOPMENT—Owner, c/o George W. Boylan, archt., 724 Paritan Ave., Highland Park. 74 unit residential development, Princeton Twp. $2,590,000.

▲ N. J., Ridgefield Park—APARTMENTS—M. & J. Holding Corp., 10 Knickerbocker Rd., Dumont, plans by C. Freeland Feilgraf, 577 Teaneck Rd., twenty 9 story apartments, Rte. 46. $8,000,000. CD 11-17.

N. Y., Brooklyn—SCHOOL—Brooklyn Preparatory School, 1150 Carroll St., Zone 25, plans by Beatty & Berlenbach, 32 Court St., Zone 2, school alterations. $600,000.

N. Y., Eltingville—CHURCH—Eltingville Lutheran Church, c/o Maurice R. Solo, archt., 607 Fifth Ave., New York, Zone 17, church. $900,000. Bids in April for first unit.

N. Y., New York—SHOPPING and BUSINESS CENTER—Marvin Knittey, 521 Fifth Ave., Zone 17, plans by Stahl, Rossler & Sons, 551 Fifth Ave., Zone 17, shopping and business center, Castle Hill Ave. between Colonnade and Randall Aves., Bronx Boro. $750,000.

N. Y., New York—APARTMENT—Meridian Holding Corp., 141 Broadway, Zone 6, plans by S. J. Kessler & Sons, 551 Fifth Ave., Zone 17, apartment, 341-53 E. 73rd St. $960,000.

N. Y., New York—APARTMENT—Henry Richmond, 349 E. 149th St., Zone 51, plans by Herbert & Clarence Liben, 1841 Broadway, Zone 23, 16 story apartment east side of Oxford Ave. south of W. 235th St., Bronx Boro. $590,000.

O., Lima—HOSPITAL—St. Rita's School of Nursing, 801 W. High St., plans by McLaughlin-Keil, 500 Dominion Bldg., Lima, 7 story hospital addn. $700,000. CD 1-3-57.

▲ O., Painesville—SHOPPING CENTER—Painesville shopping center, Inc., 1018 National City Bank Bldg., Cleveland, Zone 14, plans by Jack Alan Blaiosky, Superior Bldg., Cleveland, Zone 14, 150,000-200,000 sq. ft. Painesville Shopping Center addn. $1,000,000. Constr. in Spring.

▲ Ore., Cannon Beach—RETIREMENT HOME—King's Garden, N. 190 and Fremont Ave., Seattle 33, Wash., plans by E. Mahlum, Lloyd Bldg., Seattle 1, Wash., negotiated. 132 Apartment retirement home. $1,300,000. Constr. in June.

▲ Pa., Villanova—SCIENCE—Villanova University, Villanova, plans by Henry D. Dagit & Sons, 1329 Race St., Phila., science bldg. $2,500,000. Day & Zimmerman, 1700 Sansom St., consult. engrs. Bids in June. CD 12-16-53.

▲ S. C., Columbia—SHOPPING CENTER—Evans Corp., c/o Kenneth S. Espedahl, Barringer Bldg., shopping center. $1,500,000.

S. D., Rapid City—CATHEDRAL—Catholic Diocese of Rapid City, 1622 W. Blvd., plans by Stickle & Assoc., 2422 Prospect St., Cleveland, O., brick, tile, stone cathedral. $600,000.

▲ Tenn., Chattanooga—SHOPPING CENTER—Vincent Dobbs, c/o Heery & Heery, archts., 1722 Peachtree St. N.W., Atlanta, Ga., shopping center. $1,900,000. Bids in May.

▲ Tenn., Knoxville—SHOPPING CENTER—Clinton Pike Plaza, Inc., c/o Frank Gibson, archt., 931 McCallie Ave., Chattanooga, 100,000 sq. ft. shopping center, 27 acre tract. $1,000,000-$1,500,000.

▲ Tenn., Memphis—HOSPITAL—St. Jude's Hospital Foundation, 185 Adams Ave., plans by Paul R. Williams & Assocs., 4757 Wilshire Blvd., Los Angeles, Calif. hospital. $2,000,000.

▲ Tenn., Memphis—HOTEL—R. G. & J. B. Snowden, Deluxe Arcade Bldg., plans by Windrom, Haglund & Venable, Hotel Chisca, motor hotel addn. to Hotel Chisca. $1,500,000. Warner, Howe, Porter, Bldg., structural engr., Allen & Hoshall, 65 McCall, P., mechanical engrs.

▲ Tenn., Nashville—MOTEL—Capitol Inn, c/o Crabtree & Taylor, archts., 1805 Hanes St., 2 story motel, Charlotte, 4th and 5th Aves., N. $2,000,000.

Tenn., Nashville—CHURCH—Hillsboro Presbyterian Church, c/o John A. Preston, archt., Nashville Trust Bldg., church. $500,000.

▲ Tex., Garland—SHOPPING CENTER—M. C. Cole & Co., 2701 S. 1st St., 141,627 sq. ft. masonry, concrete, steel shopping center, $3,000,000. Paved area and 1,200 auto parking center, $90,000; site grounds development (grading, filling, leveling drainage) $56,000; Kingsley and 1st Sts. hard paved streets $100,000; water sys. $60,000; sanitary storm sewers $140,000; starting of "North Star" Subdivision.

▲ Tex., Houston—CLINIC, etc.—Baylor University College of Medicine, 1200 M.D. Anderson Blvd., clinic $1,000,000; basic science research $2,000,000; clinical research $1,500,000. Texas Medical Center. CD 4-11-52.

Tex., Houston—DWELLINGS—Draper Constr. Co., 4410 Telephone Rd., 21 dwellings, Sandalwood Subdivision. $535,750.

▲ Tex., Houston—MEDICAL OFFICE—Good Samaritan Club, 6516 Bertner St., 13 story (ultimate) 270 story, 418,175 sq. ft. masonry medical office. $12,000,000.

Tex., Houston—APARTMENT—James Griffith, 716 Dallas St., plans by Floyd & James, 3813 Buffalo Speedway, 5 story "3417 Montrose Bldg." apartment, swimming pool, Montrose Blvd. and Harold St. $750,000.

▲ Tex., Houston—OFFICE TOWER—Houston Corp., 5414 Timber Creek, 9 story, 90,000 sq. ft. office tower, San Jacinto and McKinney Sts. $2,000,000.

▲ Tex., Houston—MOTEL—Mimms Hotels Management Co., Inc., 4500 Books Bldg., Detroit, Mich., motel. $2,500,000.

▲ Tex., Houston—RECREATION CENTER—Tom Skaines, Pasadena, and 817 S. Tatar St., Houston, plans by Doughtie & Porterfield, 817 S. Tatar St., Neva Recreation Center (bowling alley, night club, skating rink, boat marina, etc.). $2,000,000.

Tex., Marshall—DORMITORY—Wiley College, plans by A. B. Wilkinson, 3309 Winthrop, Fort Worth, women's dormitory (Tex. 41-CH-102D). $600,000.

Tex., Midland—SHOPPING CENTER—David Framo, Jr., Grover Gilselman, J. V. Neuhaus 111, & Harwood, 2710 Danville St., Houston, plans by Neuhaus & Taylor, 2710 Danville St., Houston, Scharbauer Shopping Center, 45 apartment units, Big Spring St. and Schaubauer Dr. $500,000.

▲ Tex., San Antonio—RETREAT CENTER AND SCHOOL—Episcopal Diocese of West Texas, 108 W. French Pl., retreat center and school, 19 acres in Alamo Heights. $1,000,000.

▲ Utah, Murray—HOSPITAL—Latter Day Saints Church, 47 E. South Temple St., Salt Lake City, plans by Barker, Clayton & Hess, 270 S. 12th E., Salt Lake City, hospital, 6 acre site between 2nd and 3rd E., at 5840 S. $1,000,000-$1,500,000. CD 11-26.

Vt., Northfield—ACADEMIC—Norwich University, Northfield, academic bldg. to be called "Webb Hall." $700,000. Constr. in April.

Wash., Seattle—APARTMENT—Merry Investment Co., 7456 34 Ave. N. E. Zone 15, plans by O. N. McDonald, 719 2 Ave., Zone 4, 11 story, rein. conc. apartment to be known as Belmont Tower, Belmont Ave. N. and E. Republican St. $600,000. Work expected to start this summer.

Alta., Calgary—HOTEL—Stampeder Hotel Co. Ltd., 1828 Macleod Trail, Stampeder Hotel wing. $500,000.

▲ Man., Winnipeg—HOTEL—Owner, c/o Green, Blankenstein, Russell & Assocs., archts., 222 Osborne St., hotel at Polo Park Shopping Centre. $5,000,000.

▲ Ont., Oakville—SHOPPING CENTER—Oakville Wood Ltd., 328 Dundas St. W., 40-store shopping centre, northwest corner Queen Elizabeth Way and Seventh Line, north of here. $1,500,000. John W. Combs Ltd., planning and development consultants, 7 Green Valley Rd., for site plans.

Ont., Ottawa—MOTEL—Morris Berlin, 386 Somerset St. W., 90 unit ultra-modern motel, 319 Rideau St. $750,000.

(Continued on page 216)

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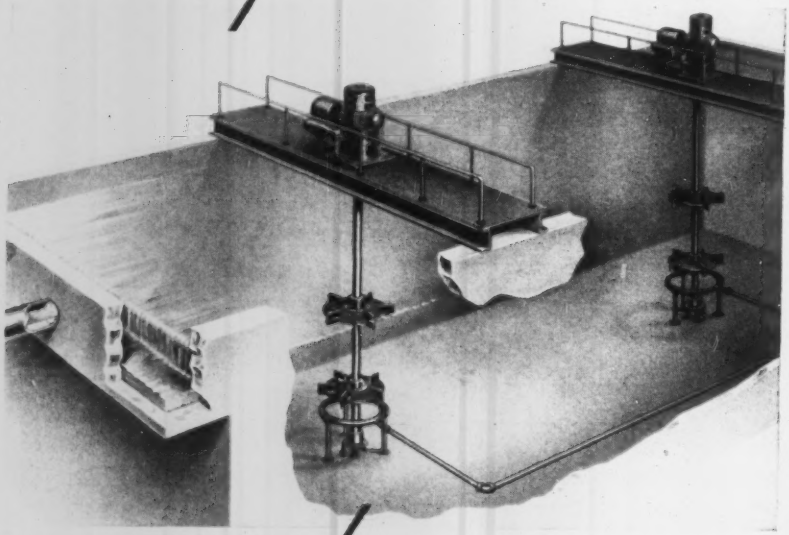

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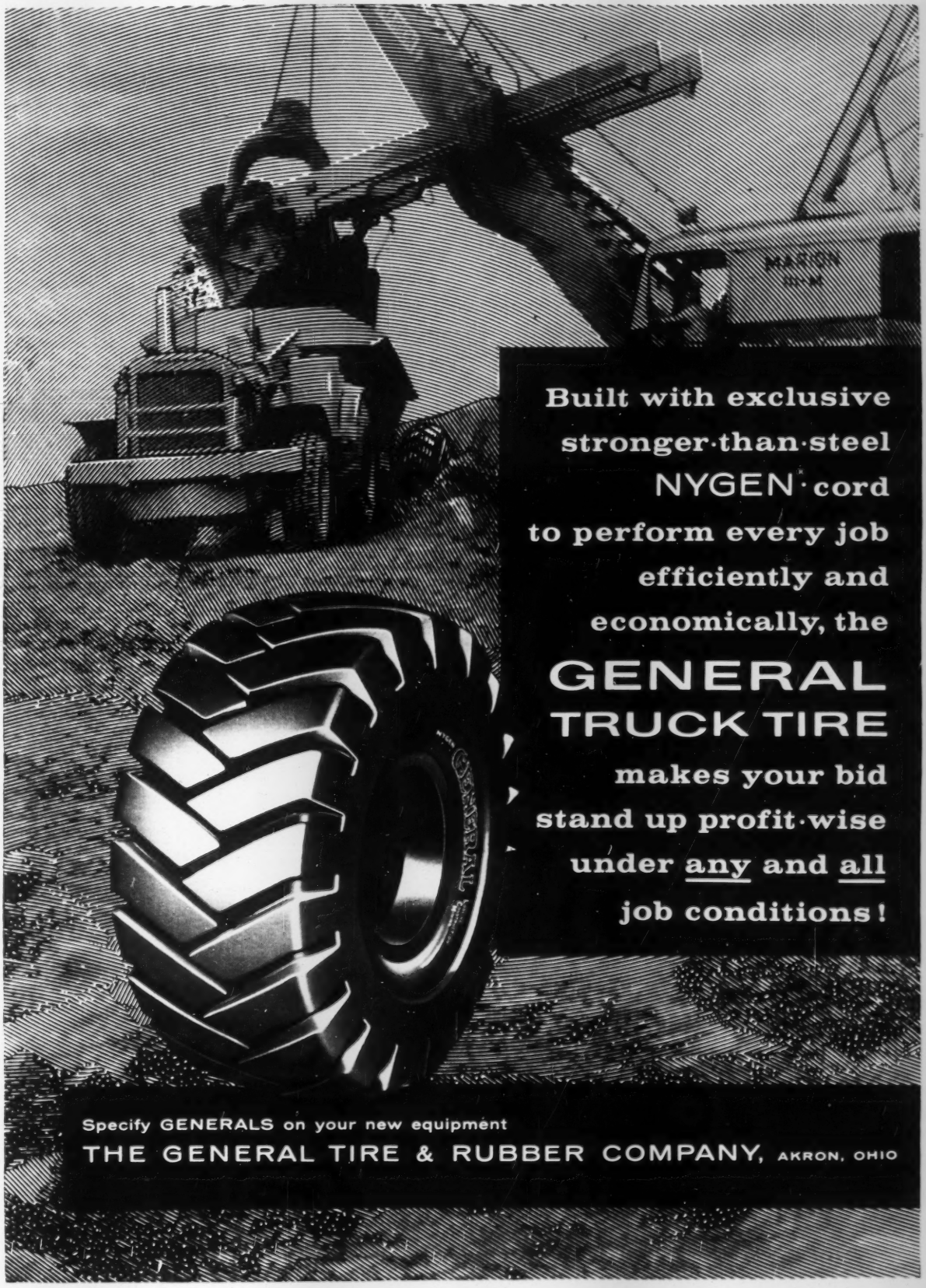

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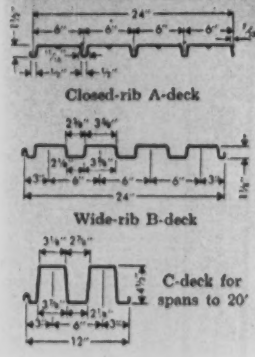

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(Continued from page 214)

▲ Ont., Toronto—OFFICE, etc.—Dominion of Canada General Insurance Co., 26 Adelaide St. W., plans by Marani & Morris, 1250 Bay St., 10 story, 100,652 sq. ft. office, garage, University Ave. and Adelaide St., $3,000,000; C. D. Carruthers & Wallace, Consultants, Ltd., 92 Yorkville Ave., consult. engrs. CD 1-7.

▲ Ont., Windsor—HOUSING—Morris Constr. (Windsor) Ltd., 15 Eugenie St., 124 unit housing program, Sandwich West Twp., $1,800,000.

Ont., Windsor—BANK—The Royal Bank of Canada, 360 St. James St. W., Montreal, Que., branch bank, Pitt St., $500,000.

▲ Que., Orsainville—INSTITUTE, etc.—Clercs de St. Viateur, 1145 rue St. Viateur W., Montreal, 150 student deaf and dumb institute, school and center, $1,000,000.

INDUSTRIAL BUILDINGS

Ala., Birmingham—PLANT—Buffalo Rock Co., 930 26 Ave. N., bottling plant, $500,000.

▲ Ariz., Phoenix—PLANT—General Electric Co., Computer Dept., 1103 N. Central Ave., 86,400 sq. ft. addition at Deer Valley Park Plant, 13430 N. Black Canyon Rd., $1,500,000.

Ark., Little Rock—CENTER—Arkansas Power & Light Co., 123 W. 4, service center for Southwestern area, $500,000; Erhart, Eichenbaum, Rauch & Blass, 201 Chester, consult. engrs. and archts.

Calif., Oakdale—WAREHOUSE, etc.—Hunt Foods & Industries, Inc., 3443 Wilshire Blvd., Los Angeles, plans by Douglass, McLellan, John Fortune, 716 W. 5th St., Los Angeles, 1 story concrete tilt-up warehouse and processing plant, $500,000.

Fla., St. Petersburg—WAREHOUSE—Atlantic Coast Line, c/o Braxton Bright, archt., Box 48, Lakeland, 1 and 2 story, brick facing passenger station, offices, warehouse, 32 St. N. and 36 Ave., $500,000.

▲ Fla., Tampa—MILL—Florida Steel Corp., 215 S. Rome Ave., electric furnace-rolling mill addn., $2,000,000.

Mass., Needham—INDUSTRIAL DEVELOPMENT—Vappi Development Co., Inc., 240 Sidney St., Boston, Riverview Industrial Development, off Rte. 128, $450,000-$500,000.

▲ N. Y., Buffalo—FLOUR MILL—General Mills, Inc., 9200 Wayzata Blvd., Minneapolis 26, Minn., 125 x 135 x 55 ft. high insulated stainless steel flour mill, Michigan Ave., near Ganson St., $1,100,000; Jacob Fruchtbaum, 1965 Sheridan Dr., Buffalo, N. Y., consult. engr.

▲ N. Y., Ithaca—ELECTRONICS RESEARCH CENTER—General Electric Corp., River Rd., Schenectady, electronics research center near Tompkins County Airport, $1,000,000; Walter Kidde Constructors, Inc., 140 Cedar St., New York, Zone 6, engr., CD 1-19.

▲ O., Dayton—PARKING GARAGE—Rike-Kumler Dpt. Store, 107 N. Main St., ramp-type parking garage for 619 cars, Main and Monument Ave., $1,250,000; National Garages, Inc., 1009 Cass, corner Lafayette, Detroit, Mich., consult. engrs.

▲ Tex., Corpus Christi—PLANT—Coastal Products Co., (Sunray-Mid-Continent Oil Co. and Suntide Refining Co.), 907 S. Detroit St., Tulsa, Okla., coking plant, $3,000,000, CD 6-10.

Tex., Edinburg—PLANT—Western Natural Gas Co., 1006 Main St., Houston, gasoline extraction plant (in or near San Salvador gas fields), near here, $500,000.

▲ Tex., Marshall—COMPRESSOR STATION—Hunt Oil Co., Mercantile Bank Bldg., Dallas, gas compressor station, 8 mi. north of here, $3,000,000.

▲ Tex., Orange—PLANT—Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, O., and c/o Petro-Chem Dev. Co., Inc., 1 Main St., Orange, Tex., synthetic rubber plant, $8,000,000.

Tex., Rockport—PLANT—Western Natural Gas Co., 1006 Main St., Houston, gasoline extraction plant (St. Charles Gas Fields), near here, $500,000.

Tex., Victoria—PLANT—Western Natural Gas Co., 1006 Main St., Houston, gasoline extraction plant (nursery fields), near here, $500,000.

▲ Wis., Racine—PLANT—S. C. Johnson & Son, Inc., 1525 Howe St., plans by Lockwood Greene Engineers, Inc., 41 E. 42 St., New York, N. Y., 40,000 sq. ft. mfg. plant, $1,000,000; Bids in Fall 1959, CD 2-2.

▲ Que., Crabtree Mills—PLANT—Westminster Paper Co., Ltd., Crabtree Mills, Que., and New Westminster, B. C., paper processing plant addns., $2,500,000; Charles T. Main, Inc., 80 Federal St., Boston, Mass., U.S.A., consult.-engr.

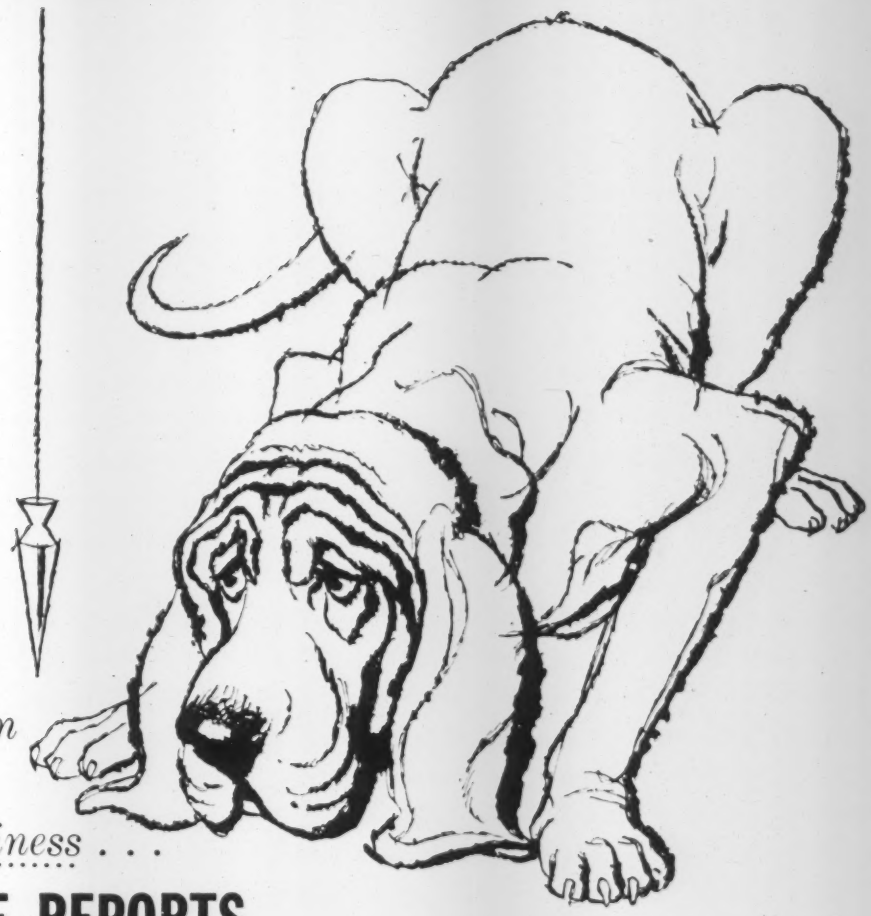
UNCLASSIFIED

Calif., Mountain View—OFF STREET PARKING FACILITIES—City, City Hall, off street parking facilities, Castro St., $900,000; Lawrence Brian, 1526 Main St., Redwood City, consult. engr.

Ill., Evergreen Park—LIGHTING—Village, 9452 S. Kedzie Ave., defeated bonds Jan. 17, installing 5 mi. mercury vapor lights, $525,000, CD 12-31.

Wash., Seattle—GOLF COURSE, etc.—Seattle Park Bd., 100 Dexter Ave., golf course, Bothell area, $400,000; central shops and warehouse, Interbay district, $200,000; develop Meadowbrook golf course as playfield and park, $350,000.

Ont., Toronto—PLAYGROUND, RECREATIONAL CENTRE—City, City Hall, playground, recreational centre, Pape Ave., south Gerrard St. E., $855,000, CD 7-24-57.



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STREETS AND ROADS

February 23, March 3 Massachusetts March 2 Connecticut

▲† Massachusetts—BA 2/26—U. S. Eng., 424 Trapelo Rd., Waltham, improv. dredging Salem Harbor, ENG-19-016-59-32. $1,250,000. CD 9-22.

BUILDINGS—BA

Mass., Boston—SCHOOL—BA 3/11—City Boston, Dpt. School Bldgs., 26 Norman St., David Ellis School addn., alterations, Roxbury, $526,000. Plans deposit $100. Mario V. Caputo, 859 Boylston St., archt. CD 7/30/57.

Conn., Greenwich—SCHOOL—BA 3/12—Town, Town Hall, Parkway Elementary School, Lake Ave. $900,000. Sherwood Mills & Smith, 65 South St., Stamford, archts. S. E. Minor & Co. Inc., Smith Bldg., engrs. CD 1/29/58.

HEAVY CONSTRUCTION—LB & CA

▲ MAINE—State Hy. Comn., Augusta,

J. R. Cianchette, Pittsfield, Me., CA $1,067,175, grading, drainage, base project, incl. 1 bridge 1,315 mi. City of Bangor—FAP No. I-95-8(18), 180, Penobscot Co. Bids Jan. 21. CD 1/26, under LB.

▲† J. R. Cianchette, 120 Main St., Pittsfield, Me., CA $1,193,573, est. $1,280,836, pavements and utilities, Loring Air Force Base, ENG-19-016-59-44, LIMESTONE, ME. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. American Hydrotherm Corp., 10-15 Jackson Ave., Long Island City, N. Y., engrs. Bids Jan. 7. CD 1/12, under LB.

▲ NEW HAMPSHIRE—Dpt. P. Wks. & Hys., Concord,

Munroe-Langstroth, Inc., 1190 Providence Tpke., Norwood, Mass., CA $1,428,050, 924 ft. 7-span welded plate girder bridge over Merrimack River, Bedford-Manchester area, Hillsboro Co. Bids Dec. 31. CD 1/7, under LB.

▲ VERMONT—State Dpt. Hys., State Office Bldg., Montpelier. Bids opened 2/6.

S. V. Rossi Constr. Co. Inc., 49 McDermott Ave., Torrington, Conn., LB $1,276,827, est. $1,300,000, sub-base with b. conc. pavement surf. course incl. two 3-span composite WF beam bridges in town of Berlin and City of Montpelier, beginning Berlin approx. 470 ft. easterly Rt. Berlin-Montpelier town line and extending westerly 0.544 mi. to proposed Winooski River Bridge, I-89-2 (3) Contr. 1, Berlin, Montpelier, and Middlesex. CD 1/29.

▲ Perini Corp., 73 Montvale Ave., Framingham, Mass.,

Morrison Knudsen Co., Inc., 150 East 42nd St., New York, N. Y., Walsh Constr., 711 Third Ave., New York, N. Y., CA $16,883,011, Contr. 254 (1st section) Wachusett-Marlboro Tunnel, Clinton-Marlboro, Boylston, Berlin and Northboro, MASSACHUSETTS. Commonwealth of Mass. Constr. Div., Metropolitan Dist. Comn., 20 Somerset St., Boston, Mass. Bids Jan. 15. CD 1/19, under LB.

CONNECTICUT—State Hy. Comr., 23 Wolcott Hill Rd., Wethersfield. Bids opened Feb. 9.

Mariani Constr. Co., Inc., 222 Forbes Ave., New Haven, Conn., LB $577,876 (9 bidders) built-up girder and 1 span rolled beam bridge over Naugatuck River and N. Y., N. H. & H. R. R., approx. 929 lin. ft. hot b. conc. approaches on Bridge St., Fed. Proj. No. U-136(3), Ansonia. CD 1/21.

BUILDINGS—LB & CA

▲ Stone & Webster Engineering Co., 49 Federal St., Boston, Mass., CA, design and construct 225,000 kw. steam POWER PLANT, Unit 1, Brayton Point, Lee River, SOMERSET, MASS., New England Electric System, 441 Stuart, Boston, Mass.

W. F. D'Annolfo Contg. Corp., 72 Franklin St., Stoneham, Mass., CA Est. $750,000, APARTMENT, Main and Collincote Sts., STONEHAM, MASS. Colonial Construction Management Corp., P. O. Box 73, Stoneham, Mass. John G. Danielson, 19 Winchester St., Lexington, Mass., archt.

Ruderman & Sanders, Fairview Heights, Ansonia, Conn., Owner Builds, $750,000, 75 HOUSES, "Fairview Heights", ANSONIA, CONN.

▲ Turner Constr. Co., 420 Lexington Ave., New York, N. Y., CA $8,000,000, 528,000 sq. ft. DEPARTMENT STORE addn., bridge over street, STORAGE WAREHOUSE addn., Talcott St., HARTFORD, CONN. G. Fox & Co., 960 Main St., Hartford, Conn. Awarded Feb. 7. CD 8/19, under LB.

▲ Wexler Constr. Co., 118 Needham St., Newton Highlands, Mass., CA $3,078,000, Albert I. Prince Regional Vocational and Technical SCHOOL, HARTFORD, CONN. State P. Wks. Dpt., 165 Capitol Ave., Hartford, Conn. Bids Jan. 21. CD 1/23, under LB.

Jack A. Halprin, Inc., 675 State St., New Haven, Conn., CA $600,000, STORAGE BLDG. and OFFICES, 270 George St., NEW HAVEN, CONN. Abner Alderman, 165 Congress Ave., New Haven, Conn. Charles H. Abramowitz, 52 Goffe Terrace, New Haven, Conn., archts. Awarded Feb. 5.

M. J. Megin Inc., 51 Elm St., Naugatuck, Conn., CA approx. $714,400. David Russell Lyman, MEMORIAL BLDG., WALLINGFORD, CONN. Gaylord Farm Assoc. Sanitorium, Cook Hill, Wallingford, Conn. Bids Dec. 2. CD 12/5, under LB.

▲ Kelburn Estates, Inc., 1007 Farmington Ave., West Hartford, Conn., Owner Builds, $2,185,000, 115 HOUSES, New Britain Ave., WEST HARTFORD, CONN.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ N. J., Hackensack—BA 3/5—Bergen Co. Sewer Auth., Room 400, Admin. Bldg., Stage 2, sewage treatment plant addns., incl. Contr. 46, general constr.; Contr. 46A, equipment and piping; Contr. 46B, structural steel and misc. metal work. Plans deposit $15. Bogert & Childs, 145 East 32 St., New York 16, N. Y., consult. engrs. CD 7/31/56.

BUILDINGS—BA

N. Y., West New Brighton—HOSPITAL—BA 3/10—Archdiocesan Bldg. Comn., 451 Madison Ave., New York, Zone 22, St. Vincent Hospital addn., 355 Burritt Ave. $750,000. York & Sawyer, 101 Park Ave., New York, Zone 17, archts.

▲ N. Y., New York—SCHOOL—BA 3/17—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general constr., plumbing and drainage, heating and ventilating, electrical work and lighting fixtures Public School 171, East 103rd St. and Madison Ave., Manhattan, Boro. $1,366,435. Plans deposit $20 for general, $10 each for trades. CD 9/9.

▲ N. Y., New York—SCHOOL—BA 3/18—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general constr., plumbing and drainage, heating and ventilating, electrical work and lighting fixtures Public School 100, Lafayette Ave. between Taylor and Thierot Aves., Bronx Boro. $2,208,000. Plans deposit $25 for general, and $8 each for trades. CD 3/31.

HEAVY CONSTRUCTION—LB & CA

Charles F. Vachris, Inc., 9024 Ditmas Ave., Brooklyn 36, N. Y., LB $653,130 (12 bidders), automatic electric pumping station, appurtenances southeast corner 155th Ave. and 100th St., 4th Ward, Queens Boro, NEW YORK. President, Queens Boro, Rm. 228, Boro Hall, 120-55 Queens Blvd., Kew Gardens 24, N. Y. Bids Feb. 10. CD 1/28.

▲ Ralph Tomasetti, 1163 58th St., Brooklyn 19, N. Y., LB $1,815,494 (9 bidders), storm and sanitary sewers and grading in E. 68th St. from east Mill Basin to Avenue T, Avenue T from E. 68th to E. 74th Sts., Avenue V from East Mill Basin to Royce St., Avenue W from East Mill Basin to Royce St., Avenue X from East Mill Basin to Royce St., E. 69th St. from Avenue W to Avenue X, E. 70th St. from Avenue V to Avenue W, E. 71st St. from Avenue T to Avenue U, E. 71st St. from Avenue V to Avenue W, E. 72nd St. from Avenue T to Avenue X, E. 73rd St. from Avenue T to Avenue X, E. 74th St. from Avenue T to Avenue X and Royce St. from Avenue U to Avenue X, storm and sanitary sewers in Avenue U from E. 68th St. to Royce Sts., BROOKLYN, N. Y. President Brooklyn Boro. Rm. 21, Boro Hall, Brooklyn 1, N. Y. Bids Feb. 10. CD 2/4.

▲ Curro Constr. Co., Union Commerce Bldg., Cleveland 14, O., CA $1,241,570, storm sewers in Franklin Ave., Talcott St. and Roberts Rd. District, DUNKIRK, N. Y. City, City Hall, Dunkirk, N. Y. CD 8-21-51.

Christopher Constr. Co., 3150 Valleyview Dr., Columbus, O., CA $628,456, Section F, sewage treatment plant for Gates-Chili-Ogden Sewer Dist., ROCHESTER, N. Y. Monroe County Sewer Agency, Rm. 407, 65 Broad St., Rochester, N. Y. Bids Dec. 23. CD 1/13, under LB.

NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton.

Brann & Stuart Co., 336 Whitehead Rd., Trenton, N. J., CA $876,508, widn., resurf. 2.8 mi. U. S. Rte. 1 from Lake Ave. to Motor Vehicle Testing Station, incl. 8 jug-handle turns, Lawrence Twp., Mercer Co. Bids Jan. 20. CD 1-26, under LB.

Bancheri Constr. Co., 11 S. 3 St., Hammonton, N. J., CA $648,062, street reconstr., Gramercy Place and Arctic Ave., ATLANTIC CITY, N. J. City, City Hall, Atlantic City, N. J. CD 1-10, under LB.

▲ Frank Stamato & Co., 284 Main St., Lodi, N. J., LB $828,490, est. $1,000,000 (22 bidders), installing pipe line in 4 sections of Wall Twp., BELMAR, N. J. Wall Twp., Belmar, N. J. CD 11-10.

Fulton & Cook, Inc., Doylestown, Pa., LB $128,792 (4 bidders) wells at Imperial Park, Allenwood and West Belmar (Belmar, N. J.).

Graven Tank & Mfg. Co., Jerkintown, Pa., LB $86,797 (4 bidders) installing tanks at Imperial Park and Allenwood (Belmar, N. J.).

† Carl E. Widell & Son, Haddonfield Rd., Merchantville, N. J., CA $618,820, FD radar facilities, FPS 35-24, incl. 5 story 85 ft. high radar tower, utilities, roads and fencing, ENG-18-020-59-13, BENTON AIR FORCE STATION, PA. U. S. Eng., 24th St. and Maryland Ave., Baltimore 18, Md. Bids Jan. 27, awarded Feb. 3. CD 2-2, under LB.

▲ Curro Constr. Co., Union Commercial Bldg., Cleveland, O., CA $814,500, Contr. 4, interceptor sewers and sewer extens., BRADFORD, PA. Bradford Sanitary Auth., Bradford, Pa. Bids Dec. 22. CD 1/9, under LB.

Wingate Constr. Co., 34 S. 17th St., Phila., Pa., CA $1,281,725, Contr. 5, general constr., sewage treatment and refuse disposal plant (Bradford, Pa.).

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2.

Case Constr. Co., Mt. Airy, Md., CA $564,641, plate girder bridge, 2-110 ft. spans to carry B. & O. R.R. over Washington Circumferential Hy., Forest Glen, M 51-2-6-320, Montgomery Co. Bids Jan. 20. CD 1/23, under LB.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2.

C. J. Langenfelder & Son, Inc., 8427 Pulaski Hy., Baltimore 24, Md., CA $520,012, grading, drainage, surf. 2.066 mi. Baltimore Beltway near Baltimore, B-635-114-420, Baltimore Co. Bids Jan. 13. CD 1/16, under LB.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore 2. Bids opened 2/3.

Md.—J. D. & C. M. Stuart, 3121 South St. N.W., Wash., D. C., LB $536,021 (7 bidders), grading, drainage, surf. 2.46 mi. Rte. 97, Barthalow Rd. to Rte. 26, incl. box culverts near Sykesville, CL-341-8-720, Carroll Co.;

Md.—James Julian, Elsmere, Del., LB $287,544 (2 bidders), grading, drainage, widn., surf. 2.595 mi. US 222, Craigtown to Port Deposit, CE-387-3-220, Cecil Co. CD 1/8.

BUILDINGS—LB & CA

† Anthony P. Miller, Inc., 3333 Arctic Ave., Atlantic City, N. J., CA $519,800, 32 single family units Capehart HOUSING, Grand Island, NEW YORK. U. S. Eng., 111 E. 16th St., New York 3, N. Y. Turano Gardner, 65 E. 55th St., New York, N. Y., archt. Bids Nov. 20. CD 12-9, under LB.

▲ Christensen & Nielsen, 422 Liberty St., Schenectady, N. Y., LB $1,497,000, general contract CELL BLOCK incl. improv. grounds and service connections, Great Meadow Correctional Institution, COMSTOCK, N. Y. Bureau Contracts, Dpt. P. Wks., State Office Bldg., Albany, N. Y. Bids Feb. 4. CD 12-24.

Strand Homes, Springfield Blvd. and 118th St., Laurelton, N. Y., Owner Builds, $925,000, 25 HOUSES, Springfield Blvd., LAURELTON, N. Y.

Barker Hall, Inc., 418 Bryant Ave., New York 59, N. Y., Separate Contracts, $898,700, 6 story APARTMENT, west side of Barker Ave., south of Waring Ave., NEW YORK, N. Y. S. J. Kessler & Sons, 551 Fifth Ave., New York 17, N. Y., archts. CD 6-19.

▲ Frouge Constr. Co., 680 Fifth Ave., New York 19, N. Y., LB $3,639,000 (21 bidders), general contract TECHNOLOGY BLDG. at City College, NEW YORK, N. Y. Bd. Higher Educ., City College, Rm. 10, Brett Hall, 136th St. and Convent Ave., New York 31, N. Y. Bids Jan. 30. CD 12-16.

H. Sand & Co., 11 Park Pl., New York 7, N. Y., LB $825,000 (11 bidders), heating and ventilating for Technology Bldg. at City College (New York, N. Y.).

Nager Electric Co., 426 Broadway, Brooklyn 11, N. Y., LB $1,129,000 (20 bidders), electric work for Technology Bldg. at City College (New York, N. Y.).

▲ George A. Fuller Co., 597 Madison Ave., New York, N. Y. and Webb & Knapp Constr. Co., 385 Madison Ave., New York, N. Y., CA Est. $66,000,000, 48 story, 2,000 room HOTEL, east side of Avenue of Americas between E. 51 and E. 52nd Sts., NEW YORK, N. Y. Zeckendorf Hotels Corp., sub. Webb & Knapp, Inc., 383 Madison Ave., New York, N. Y. Harrison & Abramovitz, 630 Fifth Ave., New York, N. Y., archts. Edwards & Hjorth, 67 W. 44th St., New York, N. Y., structural engrs. Jaros, Baum & Bolles, 415 Lexington Ave., New York, N. Y., mechanical engrs. CD 10-2, under Galbreath Corp., as owners.

▲ 350 E. 52 St. Corp., c/o J. J. Kessler & Sons, archts., 551 Fifth Ave., New York 17, N. Y., Separate Contracts, $1,000,000, 14 story APARTMENT, 939-43 First Ave., NEW YORK, N. Y. CD 8-13.

▲ Turner Constr. Co., 150 E. 42nd St., New York 17, N. Y., CA Est. $25,000,000, 41 story OFFICE, east side 3d Ave. between East 40th and East 41st Sts., NEW YORK, N. Y. Galbreath-Ruffin Realty Co., Inc., 150 E. 42nd St., New York 17, N. Y. Harrison & Abramovitz, 630 5th Ave., New York 20, N. Y., archts. CD 2-9.

Beech Haven Homes, c/o Lane Realty Co., 107-40 Queens Blvd., Forest Hills, N. Y., Owner Builds, $400,000, 20 HOUSES, HICKSVILLE Rd. south of Sunrise Hy., MASSAPEQUA, N. Y.

▲ Foster Wheeler Corp., 666 Fifth Ave., New York, N. Y., CA Est. over $2,000,000, 1 and 2 story, 80,000 sq. ft., steel concrete PLANT, BOUND BROOK, N. J. American Cyanamid Corp., 30 Rockefeller Plaza, New York, N. Y. CD 6-2.

Burlington Housing Corp., c/o Harry Goodwin, Chelten Parkway and Kings Hy., Merchantville, N. J., Separate Contracts, $855,000, 35 unit RESIDENTIAL DEVELOPMENT, Walnut St., etc., BURLINGTON, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archt.

▲ Samuel & Henry Berger, acting as Seventh & Linden Corp., 44-49 Almond St., Phila., Pa., CA $15,000,000, 25 story, 850 unit APARTMENT, Linden Place, Pearl, 7th and 6th Sts., CAMDEN, N. J. Samuel A. & Henry A. Berger, 44-49 Almond St., Phila., Pa. Milton Schwartz, 10 S. 18 St., Phila., Pa., archt.

Wigton-Abbot Corp., 1225 South Ave., Plainfield, N. J., CA Est. $500,000, design and construct 50,000 sq. ft. PLANT, ADMINISTRATION BLDG., DENVILLE, N. J. Reaction Motors Div., Thiokol Chemical Corp., 276 N. Clinton Ave., Trenton 7, N. J.

(Continued on page 220)

WHO

Lord Electric Company, Inc.

One of America's largest, most highly respected, and most thoroughly experienced firms of Electrical Contractors.

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(Continued from page 218)

Kramer & Zamiore, c/o Ben Higgins, 89 W. Allendale Ave., Allendale, N. J., Owner Builds. $575,000, 24 HOUSES, Bedford Rd., HILLSDALE, N. J. Rudolph Novak, 89 Central Ave., Clifton, and Herbert F. Necker, Glen Rd., Woodcliffe Lake, N. J. archts.

▲ **Irwin & Leighton, Inc.,** 1605 Race St., Phila., Pa., CA $2,000,000, MANUFACTURING PLANT, paving, railroad siding and sewage disposal, KING OF PRUSSIA, PA., Phila. Gear Works, Inc., G St. and Erie Ave., Phila., Pa. Bids Feb. 13. CD 2-3.

Franwall Builders, 7850 Oxford Ave., Phila., Pa., Separate Contracts, $600,000, APARTMENT, Crittenden St., PHILA., PA., Kjell Ingebrigtsen, 7850 Oxford Ave., Phila., Pa., archt.

Franwall Builders, 7850 Oxford Ave., Phila., Pa., Separate Contracts, $600,000, APARTMENT, Roosevelt Blvd. and Pennypack Circle, PHILA., PA., Kjell Ingebrigtsen, 7850 Oxford Ave., Phila., Pa., archt.

▲ **Leonard Axelrod,** 712 Alburger Ave., Phila., Pa., CA $8,750,000, 665 HOMES, Academy St., etc., PHILA., PA., Sherrie, Inc., 712 Alburger Ave., Phila., Pa., Henry S. Berg, 1422 Walnut St., Phila., Pa., archt.

▲ **Burton L. Grossman Co., Inc.,** Rte. 309 and W. Broad St., Quakertown, Pa., CA $3,000,000, SHOPPING CENTER, Rte. 309 and W. Broad St., QUAKERTOWN, PA., Quakertown Shopping Center, c/o general contractor. CD 10/11-57.

▲ **Ritter Bros.,** 1511 N. Cameron St., Harrisburg, Pa., A $1,000,000, 300x1,000 ft., aluminum paneling brick, WAREHOUSE, addn., SHIREMANSTOWN, PA., C. R. Kinney Co., Shiremanstown, Pa.

▲ † **Norair Engineering Co.,** 1118 22nd St., N.W., Wash., D. C., LB $2,298,000, (15 bidders), constr. except elevators, DENTAL RESEARCH LABORATORY for National Institutes of Health, BETHESDA, MD., General Services Admin., Regional Office Bldg., 7th and D Sts., S.W., Wash., D. C., Ted Englehardt, 933 Gist Ave., Silver Spring, Md., archt. Bids Feb. 10. CD 1-6.

Parkal Corp., 1726 L St., N.W., Wash., D. C., Owner Builds, $500,000, Section III, Acme STORE at Great Eastern Plaza Shopping Center, DISTRICT HEIGHTS, MD., Joseph Saunders, 1728 L St., N.W., Wash., D. C., archt.

▲ **Henry A. Knott,** 2406 Greenmount Ave., Baltimore, Md., LB $1,983,000, (12 bidders), DIAGNOSTIC CENTER, Patuxent Institute, JESSUP, MD., State Dpt. of Improvs., 506 Park Ave., Baltimore 1, Md. Bids Feb. 5. CD 1-23.

Wm. H. Sands, 704 York Rd., Towson 4, Md., CA $770,800, 1 story brick, concrete, steel, block built-up roofing, Scott's Branch ELEMENTARY SCHOOL, Marriotts Rd. (north of Liberty Rd. northwest of Baltimore), TOWSON, MD., Baltimore Co., Bd. Educ., Aigburth Rd., Towson 4, Md. Bids Dec. 30. CD 1-6, under LB.

▲ **Charles H. Thompkins Co.,** 1737 K St., N.W., Wash., D. C., CA $2,700,000, 4 story, masonry, steel, MECHANICAL and OFFICE BLDG., 1515 L St., N.W., WASH., D. C., Washington Post & Times Herald, 1515 L St., N.W., Wash., D. C., Sol King, 345 New Center Bldg., Detroit, Mich., archt., George H. Miehls, 345 New Center Bldg., Detroit, Mich., engr. Bids Jan. 23. CD 1-14.

▲ **Turner Constr. Co.,** 1500 Walnut St., Phila., Pa., CA $2,500,000, APARTMENT, 140 Penna Ave., WILMINGTON, DEL., Owner, c/o H. Albert Young, Equitable Security Bldg., 9 and Market Sts., Wilmington, Del. CD 7-25-58.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

February 25 Florida — March 4 Virginia

STREETS AND ROADS

February 25 Florida — March 4 Virginia
March 6 Kentucky

BUILDINGS—BA

Ala., Brewton COURTHOUSE—BA 2-25. Bd. Revenue, Courthouse, Brewton. courthouse, $650,000. Charles McCauley, Jackson Bldg., Birmingham, archt. CD 10-8.

La., Bogalusa MEDICAL CENTER—BA 3-12. Bd. Trustees Bogalusa Medical Center, 3 story, 25,800 sq. ft. steel, masonry, medical center, $850,000. Plans deposit $80. Geier & Lasseigne, 4525 N. Boulevard, Baton Rouge, archts. Bids Dec. 18, rejected. CD 12-30, under LB.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA,** Commonwealth of Va., Dpt. Hys., Central Hy. Office Bldg., 1221 E. Broad St., Richmond.

Va., Barnhill Constr. Co., Box 725, Tarboro, N. C., and L. A. Reynolds Co., Inc., 1100 W. 1st St., Winston-Salem, N. C., CA $1,458,225, 8.237 mi. grade, drain and paving, section and frontage roads, 2.39 mi. S. of Hanover Co. line ending 0.368 mi. N. Int. Rte. 64, Rte. 95, State Proj. 0095-042-101-G1, 0095-043-101-G2, Fed. Proj. I-95-2 (21-90), I-95-1 (21) 87, Hanover and Henrico Counties.

Va., McAmis Bros. Contractors, Box 247, North Tazewell, Va. and C. P. Fugate Co., Box 637, Wise, Va., CA $576,275, 2.201 mi., 22 ft. x 5½ in. bit. concrete base, bit. top beginning 0.195 mi. E. FCL Norton ending 2.496 mi. E. FCL Norton, Rte. Alt. 58, State Proj. 7058-097-101, Fed. Proj. F-074-1 (7), Wise Co.

Va., Faulconer Constr. Co., P. O. Box 236, Charlottesville, Va., CA $988,538, 2.234 mi., 24 ft. and various 10 in. aggreg. base, conc. and underpass beginning 0.114 mi. E. Int. Rte. 29 ending 0.243 mi. W. Int. Rte. 250, Rte. 250A and 29A and 29, State Proj. 7250-002-012-013-014-015-016-018, 0029-104-102, Fed. Proj. F-FG-043-1 (1), Albemarle Co. and City of Charlottesville, Grand total $3,023,038. Bids Jan. 28. CD 2-2, under LB.

† **B. F. Rodney Co.,** 1816 Jefferson Pl., N. W., Wash., D. C., CA $609,788, FD radar facilities, FPS-35 21 and electrical dist. sys. for FD radar facilities, FPS-35 23, Manassas, Air Force Station, ENG-49-080-59-42, 331 and ENG-49-080-59-34, 351, MANASSAS, VA., U. S. Eng., 1st and Douglas Sts., N.W., Wash., D. C. Bids Jan. 22, awarded Feb. 4. CD 1-26, under LB.

▲ **GEORGIA,** State Hy. Dpt., 2 Capitol Sq., S.W., Atlanta.

Atlantic States Constr. Co., 7 Baltimore Place, N.W., Atlanta, Ga., CA $1,114,975, bridge over Lazaretta Creek and 0.068 mi. b. conc. paved approaches on Savannah to Savannah Beach Rd., F-064-1 (6), SR 17, Chatham Co. Bids Nov. 14. CD 11-19, under LB.

▲ **GEORGIA,** State Hy. Dpt., 2 Capitol Sq., S.W., Atlanta.

Scott Constr. Co., Inc., Box 71, Thomasville, Ga., CA $1,536,978, 1 double and 1 single bridge railroad grade separation structures, 2 double and 1 single bridge hy. grade separation structures, 1 double bridge street crossing structures, Bainbridge By-Pass, Rd. Fed. Aid Proj. No. US-027-2 (5) and U-007-2 (5), Decatur Co. Bids Oct. 10. CD 10-15, under LB.

GEORGIA, State Hy. Dpt., 2 Capitol Sq., S.W., Atlanta.

Southeastern Highway Contr. Co., Box 476, Gainesville, Ga., CA $881,879, paving b. conc., sidewalks, curb and gutter, 8.916 mi., Fitzgerald, Abbeville Rd., F-044-2 (4), SR 112, Ben Hill Co. Bids Oct. 19. CD 12-24, under LB.

▲ **GEORGIA,** State Hy. Dpt., 2 Capitol Sq., S.W., Atlanta.

Shepherd Constr. Co., Box 8068, Station F, Atlanta, Ga., CA $989,158, 6.6 mi. resurf. with b. conc., curb and gutter and concrete sidewalk and 1 bridge, 11.747 mi. Perry to Hayneville Rd., F-001-1 (5), SR 7, Houston and Peach Counties.

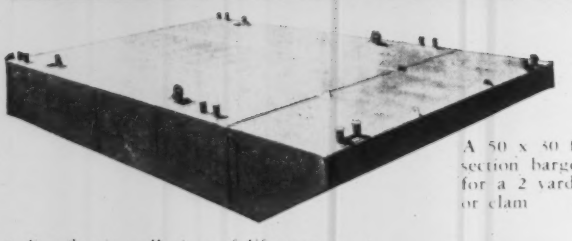
Ga., DuBose Constr. Co., Box 442, Montgomery, Ala., CA $1,359,728, b. conc. paving 4-lane bridge over Flint River and 4-lane bridge over S. A. L. R. R. tracks on SR 38 and 2-lane bridge over A. C. L. R. R. tracks on SR 2, partly relocated, Bainbridge, 1.845 mi., U-007-1 (5), OT 1, and U-027-2 (3), OT 1, SR 38, Decatur Co. Bids Nov. 14. CD 11-19, under LB.

FLORIDA, State Rd. Dept., Tallahassee.

W. H. Armston Co., Inc., Box 46, Dunedin, Fla., CA $712,227, 6-lane dual roadway facility, 10½ in. limerock base and 4-lane facility 8½ in. limerock base, Type 1 b. conc. surf. course with binder course, storm sewers, etc., 1.149 mi. and 0.525 mi., SR 685 and SR 580 on Florida Ave. and Temple Terrace Hy., State

(Continued on page 223)

MANITOWOC
SECTIONAL BARGES



A 50 x 50 foot four-section barge suitable for a 2 yard dragline or clam

- For floating all sizes of lift cranes, clams, draglines and other contractors' equipment.
- Easily assembled or knocked down for moving by rail or highway.
- Sections can be assembled into numerous barge sizes.
- Spuds, deck fittings, loading ramps and other accessories available.

Above, a sectional barge completely assembled with crane, spuds and deck equipment ready to go to work.

Designed for the contractor who needs low cost, flexible and portable floating equipment, a typical clam operation performed from a sectional barge.

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LORAIN 2½-YD. 85-A HELPS BOSO AND RITCHIE MOVE 525,000 YARDS AHEAD OF SCHEDULE

28 Lorains have paid off for Boso and Ritchie, Inc.

"There's no substitute for ruggedness and the Lorain 85-A has it. The shale we handled has a density of 2,800 pounds per yard, the sandstone 3,000 pounds a yard. And our 2½-yard Lorain averaged 2,000 yards a day, helped us complete 75% of the job in half the allotted time."

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Unmatched dipper action with "Joy Stick" control. Finger tip "metered" air power control with only two levers eliminated most of the slam bang operation. Smooth, controlled application of power has doubled cable life.

Shear-Ball mounting helps cut maintenance. Lorain's exclusive turntable mounting gives smooth, rock-steady swing—no need for the constant adjustment common to other mountings. Infrequent greasing is all the maintenance that's needed.

Controllability pays off on crane and hoe operations. With "Joy Stick" metered air control the operator combines operations to any degree wanted. "This simultaneous hoist, swing and travel is especially important on bridge jobs when we're using our 85-A as a crane to place steel in tight positions."

Rugged, with low maintenance, superior controls, and readily convertible to shovel, dragline, clamshell, hoe or crane, the versatile 85-A can boost your output whatever your job. Contact your Lorain distributor for the whole story.

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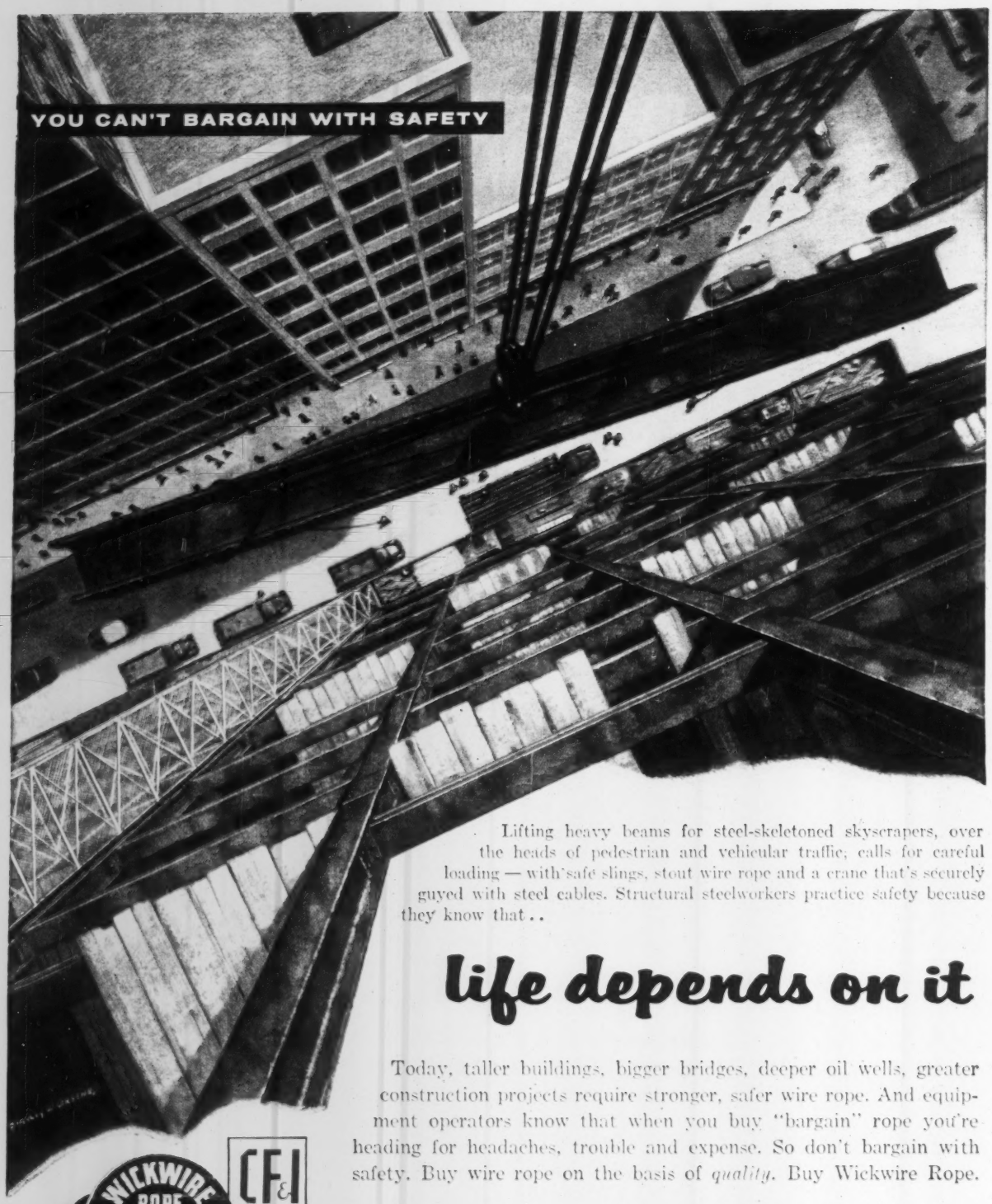

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Today, taller buildings, bigger bridges, deeper oil wells, greater construction projects require stronger, safer wire rope. And equipment operators know that when you buy "bargain" rope you're heading for headaches, trouble and expense. So don't bargain with safety. Buy wire rope on the basis of *quality*. Buy Wickwire Rope.

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(Continued from page 221)

Proj. Jobs Nos. 10023-3107 and 10310-3101. Hillsborough Co. Bids Oct. 28; awarded Feb. 5. CD 10-31 under LB.

▲ **FLORIDA**—State Rd. Dpt., Tallahassee. Bids opened Feb. 6:

Duval Engineering & Contg. Co., Box 1588, Jacksonville, Fla., LB **$1,952,489**, est. $1,850,000, 4-6 lane 9 in. c. conc. pavement, 6½ in. and 8½ in. limerock base with Type 1 b. conc. surf. course, 6½ in. limerock base shoulders with Type 1-A surf. tr., 2 concrete box culverts, etc., 1.196 mi., SR 8, 10 and 15, in Jacksonville. FAI Proj. No. 1-10-5 (6) 357, Job No. 72270-3480. CD 1-27.

▲ **FLORIDA**—State Hy. Dpt., Tallahassee:

Jas. H. Craggs Constr. Co., Box 22, Gainesville, Fla., CA **$1,461,268**, limerock base, b. conc. surf. course and binder, 5 conc. 2,698 mi. between point 1.3 mi. South St. Augustine and Orange St. in St. Augustine, SR 5 (US 1). Fed. Aid Projs. Nos. F-033-6 (11) and U-003-6(12). Job Nos. 78101-3204 and 78010-3205. St. Johns Co. Bids Dec. 16; awarded Feb. 4. CD 12-19, under LB.

▲ **ALABAMA**—State Hy. Dpt., Montgomery, Zone 4:

Ala.—**A. E. Burgess Co., Inc.**, 3700 10 Ave. N., Birmingham, Ala., CA **$912,075**, base and conc. pave 3.121 mi. from Reid's Gap to near Blount-Cullman Line on Inter. 65, Cullman Co.; CA **$1,659,264**, base and pave 6.715 mi. from Mulberry Fork, Warrior River N. toward Cullman Inter. 65, Cullman Co.;

Ala.—**Couch Constr. Co.**, Box 859, Dothan, Ala., CA **$1,418,052**, base and pave 12.601 mi. from S. of Auburn to E. Opelika on Inter. 85, Lee Co.;

Ala.—**Burgreen Constr. Co.**, Athens, Ala., CA **$1,276,906**, grading, draining 6.545 mi. from N. Hamiltonville NE to Georgia Line on Inter. Rt. 59, DeKalb Co. Grand total $5,266,247. Bids Dec. 30. CD 1-6, under LB.

▲† **Traylor Brothers**, Upper Mt. Vernon Rd., Evansville, Ind., LB **$4,481,708**, est. $3,543,447 (7 bidders), reconstr., widen canal, sewer extension, etc. Louisville Locks and Dam, Ohio River, CIVENG-15-029-59-43, KENTUCKY and INDIANA. U. S. Eng., P.O. Box 59, Louisville 1, Ky. Bids Feb. 11. CD 1-26.

▲ **KENTUCKY**—Commonwealth of Ky., Dpt. Hys., Frankfort. Bids opened 2-6:

Ky.—**Codell Constr. Co.**, Winchester, Ky., LB **$1,889,633** (11 bidders), grade, drain, surf. 5.006 mi. Louisville-Lexington Rd. 500 ft. east Seven Mile Pike extending southeasterly, 1-64-3.7135, SP 106-806, Shelby Co.;

Ky.—**Solomon Constr Co.**, Calvert City, Ky., LB **$220,544** (6 bidders), b. conc. Class 1 surf. 1.247 mi. West Paducah-Heath Rd. S. 63(5) SP. 73-292, McCracken Co. CD 1-21.

† **Phillips & Jordan**, Robbinsville, N. C., CA **$522,368**, clearing Rough River Reservoir Area, CIVENG-15-029-59-53, KENTUCKY. U. S. Eng., P.O. Box 59, Louisville 1, Ky. Bids Jan. 9. CD 1-14, under LB.

BUILDINGS—LB & CA

George W. Kane, Jefferson Blvd., Greensboro, N. C., CA **$616,512**, HANES PARK ELEMENTARY SCHOOL and WILEY JUNIOR HIGH SCHOOL, WINSTON-SALEM, N. C. Bd. Educ., City Hall, Winston-Salem, N. C. CD 1-7, under LB.

▲ **H. E. Collins Contg. Co.**, 793 E. 8 St., Chattanooga, Tenn., LB **$1,289,877**, John L. Hutcheson Memorial Tri-County HOSPITAL addn., alterations, FORT OGLETHORPE, GA. Tri-County Hospital Auth., Fort Oglethorpe, Ga. Bids Feb. 4. CD 1-15.

Innanen Bros., 1274½ S. Verbena Dr., Orlando, Fla., CA **$672,787**, Colonial JUNIOR-SENIOR HIGH SCHOOL addn., ORLANDO, FLA. Orange Co. Bd. P. Instruction, Orlando, Fla. Bids Jan. 26. CD 2-6.

▲† **C. A. Parsons & Co., Ltd.**, Newcastle, England, CA **$12,095,800**, 500,000 kw turbo generator for Colbert STEAM PLANT, near Tuscumbia, ALABAMA. Tennessee Valley Auth., New Sprankles Bldg., Knoxville, Tenn. CD 1-23.

J. E. Staub, Fulton, Miss., LB **$774,991**, est. $632,000 (7 bidders). Base Bid, 1 story, masonry exterior, concrete block interior 50-bed HOSPITAL, ARMORY, MISS. Gilmore Memorial Hospital, Armory, Miss. Bids Feb. 3. CD 1-19.

▲ **Cooper Constr. Co.**, Box 5795, Jacksonville, Fla., LB **$1,969,000** (11 bidders), Glen Oaks HIGH SCHOOL, Cedar Grove Dr., near West Merrydale Subdivision, BATON ROUGE, LA. East Baton Rouge Parish School Bd., 805 St. Louis St., Baton Rouge, La. Bids Feb. 5. CD 1-20.

▲ **Louisville Gas & Electric Co.**, 311 W. Chestnut St., Louisville 2, Ky., Owner Builds, **$20,000,000**, Phase 4 expansion of POWER PLANTS at River Rd. and Cane Run Rd., incl. 125,000 kw capacity generating unit, 1 turbine steam boiler, etc., LOUISVILLE, KY. Pioneer Service & Engineering Co., 231 S. LaSalle St., Chicago, Ill., consult. engr. CD 4-10.

▲† **J. A. Jones Constr. Co.**, 311 Church St., Nashville, Tenn., CA **$6,130,000** (13 bidders). CENTRAL RESEARCH LABORATORY (Bldg. 4500) addn., Inv. 401-59-3A, OAK RIDGE, TENN. Atomic Energy Comn., Area Constr. Div., Bldg. 9720-6, Oak Ridge, Tenn. A. M. Kinney, Inc., 2405 Vernon Place, Cincinnati, O., archt. Bids Jan. 15. CD 1-23, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 4 Michigan
STREETS AND ROADS
February 24 Indiana March 4 Michigan

Ill., **Downers Grove**—BA 3-3—Downers Grove Sanitary Dist., 5118 Main St., sanitary sewers, 4 lift stations, 7,500 ft. 24 in. concrete pipe, 18,500 ft. vitr. clay pipe, 4,100 c.i. pipe, $650,000. Consoer Townsend, 360 E. Grand Ave., engr. Bids 12-9 rejected. CD 12-17, under LB.

▲ † **Illinois**—MISSILE MASTER FACILITIES—BA 3-11—U. S. Eng., 475 Merchandise Mart, Chicago, Zone 54, Missile Master Bldg., central heating plant, 2 radar towers, security office, pump house, squadron headquarters, Arlington Heights, ENG-11-032-59-71, $3,000,000. CD 2-11.

BUILDINGS—BA

Ill., **Chicago**—SCHOOL—BA 3-2—Bd. Educ., 228 N. LaSalle St., Kinzie School addn., 56 St. and Mobile Ave., $900,000. John C. Christiansen, 228 N. LaSalle St., archt. CD 10-30.

▲ Ill., **Chicago** — APARTMENTS — BA 3-3 — Chicago Housing Authority, 608 S. Dearborn St., Proj. No. Ill. 234-2, 4 and three 8 story, brick, rein.-con. apartments, $7,500,000. Mark D. Kalischer, 230 E. Ohio St., archt.; Samuel Arthur Lichtmann, 134 S. LaSalle St., engr. CD 10-26-55.

▲ **Ind., Brazil** HOSPITAL—BA 3-4—Bd. Trustees Clay Co. Hospital, 2 story hospital addn., East side 4 story hospital addn., West side, $1,000,000. Plans deposit $25. J. M. Rotz Eng. Co., 1919 N. Meridian St., Indianapolis, engr.; McGuire & Shook, Compton, Richey & Assocs., Indiana State Teachers Bldg., Indianapolis, archts. CD 10-21.

HEAVY CONSTRUCTION—LB & CA

Kalill Co., 4161 W. 150th St., Cleveland 11, O., LB **$651,413**, (5 bidders), Cuyahoga River interceptor sewer in Dille Ave. and Independence Rd., CLEVELAND, O. City, Dpt. P. Service, City Hall, Cleveland, O. Bids Jan. 29. CD 1-21.

† **Empire Gas Engineering Co.**, P. O. Box 1738, Atlanta, Ga., LB **$617,400**, est. $764,202 (11 bidders), fue-

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storage tanks, Clinton County Air Force Base, WILMINGTON, O., U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. Bids Feb. 3. CD 1-7.

MICHIGAN—State Hy. Dpt., Mason Bldg., Lansing, Bids opened 1-7.

Darin & Armstrong, Inc., 2041 Fenkell, Detroit, Mich., LB $850,262, six structures US 31, Muskegon East Belt, Black Creek, Broadway St., Shettler Rd., Sherman Ave., Apple Ave. (M 46), and Laketon Ave. and Grand Trunk Western tracks.

▲ MICHIGAN—State Hy. Dpt., Mason Bldg., Lansing, Bids opened 1-7.

Mich.—Julius Porath & Son Co., 12201 Beech Daly, Detroit 39, Mich. and Sugden & Sivier, Inc., 13100 Cloverdale, Oak Park, Mich., LB $578,506, 0.4 mi. paving and ramps, constr. and relocation city lighting, power and signal facilities from 3rd Ave. to Griswold Ave., The Lodge Expressway.

Mich.—Hertel-Deyo Co., 5205 Division S., Grand Rapids, Mich. and C. E. Utterbeck, Mt. Pleasant, Mich., LB $1,651,319, 3.1 mi. single 24 ft. concrete roadway US-16 north to Laketon Ave. and 1.4 mi. dual 24 ft. concrete pavement from Laketon Ave. to just north of Apple Ave. (M 46).

Mich.—Holloway Constr. Co., 29350 Joy, Livonia, Mich., LB $1,270,140, 10.9 mi. 24 ft. concrete roadway US 23 from M 59 north to connection with Fenton-Clio Expressway at Livingston-Genesee Co. Line, Livingston Co.

BUILDINGS—LB & CA

Edw. T. Honnert & Sons, 8250 Colerain Park, Cincinnati, O., LB $646,469 (14 bidders), HIGH SCHOOL, Monfort Heights, CINCINNATI, O., Catholic Archdiocese of Cincinnati, 29 E. 8th St., Cincinnati, O. Bids Feb. 5. CD 1-16.

Frank Messer & Sons, Inc., Paddock Rd., Cincinnati, O., CA $645,800 (11 bidders) 2 story brick reinforced concrete 42-bed HOSPITAL addn., CINCINNATI, O., Holmes Hospital, Eden and Bethesda Aves., Cincinnati, O. Bids Jan. 21. CD 1-6.

▲ Fabe Constr. Co., 3700 Reading Rd., Cincinnati, O., CA $2,500,000, general contract 23 story, 120,000 sq. ft. OFFICE, incl. 400-car GARAGE, one-acre site at Victory Parkway and Calvin Cliff, CINCINNATI, O. Mark Kroll, 6480 Fair Oaks Dr., Amberley Village, O., George H. Godley, 918 East Court St., Cincinnati, O., archt., O. W. Mintz, 2516 Park, Cincinnati, O., engr. CD 7-17-57, under 20th Century Realty Co. as owner.

▲ E. J. DeBartolo Constr. Co., 2640 Market St., Youngstown, O., CA Est. $3,000,000, 37 unit SHOPPING CENTER, 45 acre site, incl. 3,000 car parking, 1500 Akron-Canton Rd., LAKEMORE, O., Lakemore Plaza, Inc., c/o contractor.

▲ Badger Mfg. Co., 230 Bent St., Cambridge, Mass., CA Est. $2,000,000, PLANT to produce acrylonitrile, LIMA, O., Standard Oil Co. of Ohio, Midland Bldg., Cleveland 15, O. CD 2-21.

▲ Zehman-Wolf & Sherman Constr., 13484 Cedar Rd., Cleveland 18, O., CA Est. $1,250,000, 3 story MEDICAL BLDG., MAPLE HEIGHTS, O., Southgate Shopping Center, Libby and Northfield Rds., Maple Heights, O., Sidney H. Morris & Assoc., 134 S. LaSalle St., Chicago, Ill., archts. CD 1-7.

▲ Gorman & Avelle, 2341 E. 22nd St., Cleveland 15, O., LB $1,068,336 (11 bidders) heating and plumbing for COMMUNITY HOSPITAL, PARMA, O., Parma Community Hospital, 7441 W. Ridgewood Dr., Parma 29, O. Bids Feb. 4. CD 1-6.

Doan Electric Co., 725 Hamilton Ave., Cleveland 14, O., LB $441,000 (8 bidders), electrical work for Community Hospital, Parma, O.

▲ Roediger Constr. Co., 1729 Superior Ave., Cleveland 14, O., LB $3,553,829, Base Bid (7 bidders), general contract GENERAL HOSPITAL, PARMA, O., Parma Community Hospital, 7441 W. Ridgewood Dr., Parma, O. Bids Feb. 4. CD 1-6.

▲ Woodland Estate Development Co., 23 E. Exchange St., Akron, O., Owner Builds, $1,500,000, 50 HOMES on former Woodlands Golf Course, Rte. 18, TALLMADGE, O.

▲ Frum-Colnon Contrg. Co., 1505 E. Epler St., Indianapolis, Ind., CA est. $5,000,000, cement PLANT, incl. 2 large rotary kilns to replace 10 smaller kilns, equipped with dust-collecting devices, MITCHELL, IND., Lehigh Portland Cement Co., Mitchell, Ind.

Coath & Goss, Inc., 5103 W. Lake St., Chicago 44, Ill., CA $595,688, Lester and Pierce SCHOOL Addns., Fairmont GRADE SCHOOL, DOWNERS GROVE, ILL., School Dist. 148, 946 Warren St. Bids Jan. 27, awarded Feb. 6. CD 2-3, under LB.

Bd. Educ., Milltown, Wis., rejected bids Nov. 20, 1 story, bsmt., 185 x 265 ft. high school, MILLTOWN, WIS., $600,000, LB $355,500 general contract CD 12-4, under LB.

▲ Raymond Concrete Pile Co., 140 Cedar St., New York, N. Y., CA $1,283,900, FOUNDATION WORK for Post Office, East St. W. West Jefferson Ave., 8th and 10th Sts., DETROIT, MICH., Post Office Dpt., Bureau Facilities, Rm. 3000, Wash. 25, D. C. Bids Feb. 3. CD 2-6, under LB.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

February 27 Minnesota, North Dakota

STREETS AND ROADS

February 27 Minnesota, North Dakota

▲+ N. D., Grand Forks, ASERT APRON, etc.—BA 3-3—U. S. Eng., 1709 Jackson St., Omaha, Neb., SAC

(Continued on page 227)

Pierce Island Bridge, Portsmouth, N. H.

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(Continued from page 224)

alert apron expan. and bridge, ENG-25-066-59-79, $1,000,000-$1,500,000. CD 9-9.

† South Dakota—BA 3.10—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., levees and channel alterations, Section III, Big Sioux River, ENG-25-066-59-71, $950,000-$1,200,000. CD 9-23.

▲† Wyo., Cheyenne—LAUNCH FACILITIES AND UTILITIES—BA 3.10—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., launch facilities and utilities, incl. 9 launch and service bldgs.; 3 launch operations bldgs.; three 2 story, 96 x 121 ft. launch operations bldgs.; 4 power and pump houses, etc.; Squadron II, Warren Air Force Base, ENG-25-066-59-30. Extended date CD 1-26.

▲† Arkansas—BA 4.8—U. S. Eng., P. O. Box 867, Little Rock, diversion Lock and embankment of Dardanelle Lock and Dam, Arkansas River, Mile 258, Pope Co., CIVENG-03-050-59-37, $5,000,000. CD 9-19.

BUILDINGS—BA

Minn., Minneapolis—HALLS—BA 3.50—Regents of the University of Minnesota, 404 Administration Bldg., Zone 14, Jackson and Owre Halls addn., Minneapolis Campus, $980,000. Plans deposit $25. C. H. Johnston, 715 Empire Bank Bldg., St. Paul, Minn., archt. CD 6-7-57.

▲ Mo., St. Louis—HOSPITAL, etc.—BA About 3.20—Christian Hospital, 4400 N. Newstead Ave., Zone 15, 5 story, bsmt., penthouse 80 x 138 ft. hospital addn., Carter and Newstead Aves., $2,000,000. Sys. 6. Schmidt & Assocs., 1819 Railway Exchange Bldg., 611 Olive St., Zone 1, archts.-engrs. Former bids rejected. CD 4-18, under LB.

HEAVY CONSTRUCTION—LB & CA

▲ IOWA—State Hy. Comm., Ames. Bids opened 2-10. Iowa—Booth & Olson, Inc., 529 Ins. Exchange Bldg., Sioux City, Iowa, LB $2,145,467, c. conc. 7.002 mi. I-IG-80-2 (7) 63, Cass Co., LB $448,188, grading 8.171 mi. I-29-6 (3) 114, I-03-6 (3), Monona Co. Iowa—Land Constr. Co., 502 Seneca St., St. Joseph, Mo., LB $2,216,448, b. conc. 8.174 mi. I-80-2 (12) 96, Adair, Dallas and Madison Counties, LB $235,083, b. conc. 9.53 mi. CO-59-1, Tama Co.

Iowa—Mauer Constr. Co., Sac City, Iowa, LB $150,980, b. conc. 6.053 mi. S-1057 (5), Cherokee Co., LB $333,039, b. conc. 11.877 mi. 2-AC-59, Cherokee Co.

† Mary Constr. Co., Inc., P. O. Box 423, Cape Girardeau, Mo., CA $822,925, est. $1,044,072, levee flood protection Item I-2-B involving 0.9 mi. earthen levee Alternate II, hydraulic fill 445,000 cu. yd. embankment, levee, 86,000 cu. yd. topsoil, 18-in. 77,000 cu. yd. riverside blanket, etc., St. Louis, CIVENG-23-065-59-31, MISSOURI, U. S. Eng., 420 Locust St., St. Louis 2, Mo. Bids Jan. 14. CD 1-20, under LB.

▲† Morrison-Knudsen Co., Inc., 319 Broadway Ave., Boise, Idaho, Henry J. Kaiser, 1924 Broadway, Oakland, Calif., and Johnson, Drake & Piper, Inc., Baker Bldg., Minneapolis, Minn. (joint venture), LB $17,613,384, est. $19,686,196, Greers Ferry Dam and appurtenant works, Little Red River, CIVENG-03-050-59-22, ARKANSAS, U. S. Eng., P. O. Box 867, Little Rock, Ark. Bids Feb. 10. CD 12-3.

▲ NORTH DAKOTA—State Hy. Dept., Bismarck.

N. D.—O. W. Swanson Constr. Co., 550 Snelling Ave., St. Paul, Minn., and Swanson-Truax, Inc., Minneapolis, Minn., CA $1,324,794, c. conc. 9.298 mi. Interstate Rte. 94 from Cleveland east and west, Proj. I-94-6 (20) 251, Stutsman Co.

N. D.—P. A. Bradbury Constr. Co., Wylie Park Rd., Aberdeen, S. D., CA $962,702, b. conc. surf. stock piles 21.964 mi. SH 5 from Langdon west and east, Proj. FAS 9 (11) and SAP 242, Cavalier and Pembina Counties.

N. D.—Central States Constr. Co., Crosby, Minn., CA $1,587,541, c. conc. 18.122 mi. Interstate Rte. 29 from Drayton north and south, Proj. I-IN-29-5 (12) 183, Pembina and Walsh Counties.

N. D.—The Haggart Constr. Co., 867 2nd Ave. N., Fargo, N. D., CA $1,009,559, c. conc. surf. 18.122 mi. Interstate Rte. 29 from Drayton north and south, Proj. I-IN-29-5 (12) 183, Pembina and Walsh Counties.

N. D.—S. J. Groves & Sons Co., Wesley Temple Bldg., Minneapolis, Minn., CA $1,252,492, c. conc. 15.102 mi. Interstate Rte. 29 from Pembina north and south and Spur to Pembina, Proj. I-29-5 (13) and F-400 (1), Pembina Co.

N. D.—Megarry Bros., N. 33 St., St. Cloud, Minn., CA $812,880, b. conc. surf. 14.916 mi. Interstate Rte. 29 from Pembina north and south, Proj. I-29-5 (13)201, Pembina Co.

N. D.—Harris Constr. Co., 1041 Main St., Aberdeen, S. D., CA $723,372, grading 18.695 mi. Interstate Rte. 94 from Tower City west and southeasterly, Proj. I-94-8 (0) 297, Barnes and Cass Counties.

N. D.—E. W. Coons Co., Hibbing, Minn., CA Alt. A-$879,926, c. conc. paving 10.005 mi. SH from Langdon east, Proj. F-242 (9), Cavalier Co., Grand total $1,554,266. CD 2-11, under LB.

† M. A. Garland Constr. Co., P. O. Box 147, Rapid City, S. D., LB $685,412, est. $716,937 (8 bidders), readiness crew bldg. and alert apron perimeter utilities, Ellsworth Air Force Base, ENG-25-066-59-66, RAPID 2(7)x, U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Feb. 5. CD 1-8.

▲† Bushman Constr. Co., 5 and Felix St., St. Joseph, Mo., CA $1,434,548, section of Osborne Canal, laterals and associated features of Webster Unit, Missouri River Basin, Spec. DC-5129, KANSAS, Bureau Reclamation, Dept. Interior, Stockton, Kan. Bids Jan. 22. CD 12-29, under LB.

▲ KANSAS—State Hy. Comm., Kansas City. Bids opened 2-6.

Kan.—Geo. Bennett Constr. Co., 3400 North 91st St., Bethel, Kan., LB $350,864, 7 bidders, grading 2.355 mi. SP 7-105 F-081-2, Pt. Wyandotte Co.

Kan.—J. A. Tobbin Constr. Co., 1701 Rambla Blvd., Kansas City, Kan., LB $232,727 (4 bidders), grading 0.145 mi. SP 635-46 I 635-3 (14) 230; LB $96,796 (4 bidders), grading 0.788 mi. SP 69-46 U 083-3 (9), both in Johnson Co.; LB $1,090,940 (3 bidders), concrete pavement 1.984 mi. SP 40-105 F 084-1 (4), Wyandotte Co.

Kan.—Reno Constr. Co., Box 61, Overland Park, Kan., LB $690,159 (6 bidders), grading 12.878 mi. SP 13-75 K 1014 (3), Pottawattamie Co. CD 1-23.

▲ KANSAS—State Hy. Comm., Hutchinson. Bids opened 2-5.

Kan.—Clarkson Constr. Co., Box 4924, Station F, Kansas City 1, Mo., LB $1,009,996 (3 bidders), grading 4.109 mi. SP 235-87 I 235-1 (15) 49 Pt. III, Sedgwick Co.

Kan.—Freeto Constr. Co., Inc., Box 609, Pittsburg, Kan., LB $323,976 (11 bidders), AA base course 10.271 mi. SP 163-96 F 018-4 (6), Sumner Co.

Kan.—Grosshans & Petersen, Inc., Box 167, Marysville, Kan., LB $619,236 (4 bidders), grading 1.739 mi. SP 235-87 I 235-1 11-48, Sedgwick Co.

Kan.—J. H. Shears' Sons, Inc., 819 W. 1st St., Hutchinson, Kan., LB $573,094 (8 bidders), AB base course and b. conc. 9.4 mi. SP 56-80 F 062-2(20), Pts. I & II, Rice Co. CD 1-23.

▲ KANSAS—State Hy. Comm., Hutchinson. Bids opened 2-5.

Russell Ralph Co., Inc., Box 799, Topeka, Kan., LB $147,457 (5 bidders), Br. No. 235-87, 20-40, Sta. 213 plus 24.36 (2 structures) 36 ft., 6-45.5 ft. 36 ft. reinf.-con. slab, SP 235087 I-235-1 (15) 49 Pt. III; LB $103,199 (7 bidders), Br. No. 235-87, 20-90, Sta. 241 plus 29.13, 40 ft., 70 ft., 70 ft., 40 ft. reinf.-con. box girder, SP 235-87 I 235-1 (15) 49 Pt. III; LB $390,879 (7 bidders), Br. No. 235-87-21.90, Sta. 280 plus 84.03 (2 structures), 43 ft., 9-60 ft., 43 ft. reinf.-con. girder SP 235-87 I 235-1 (15), 49 Pt. III; LB $443,351 (5 bidders) Br. No. 235-87-24.33, Sta. 418 plus 73.09 (2 structures), 49 ft., 9-66 ft., 49 ft. reinf.-con. girder, SP 235-87 I 235-1 (15) 49 Pt. III, all in Sedgwick Co. CD 1-23 under Streets and Roads.

▲† B. & M. Constr. Corp., 1st National Bank Bldg., Oklahoma City, Okla., CA $1,372,551, earthwork, structures, concrete pipe lines for Anadarko aqueduct, Western Farmers Electric Co-operative lateral and Fort Cobb lateral, Washita Basin Proj., Spec. DC 5126, Anadarko, OKLAHOMA, Bureau Reclamation, Dept. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. CD 1-27, under LB.

▲ A. O. Smith Corp., 35-33 N. 27th St., Milwaukee, Wis., CA Est. $14,500,000, furnishing 375 mi. 24 in. diam. pipe for loop lines from Laverne Field,

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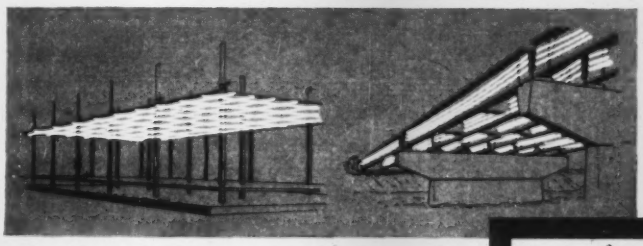

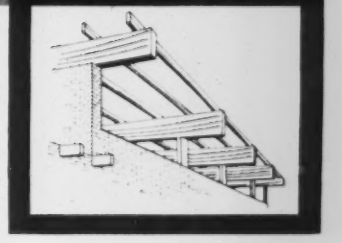

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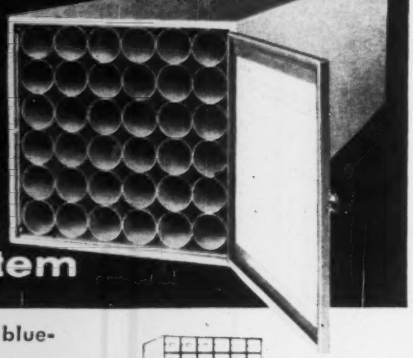

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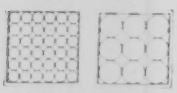

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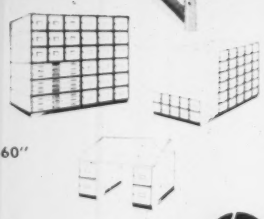

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TEXAS—State Hy. Comn., Austin.

L. H. Lacy Co., Dallas Love Field, Dallas, Tex. CA $794,715, grade, structures, storm sewers and concrete paving 2.908 mi. Hy. Spur 244. Proj. U. S. 1530 (4) Dallas Co. Bids Jan. 27. CD 1-26, under LB.

▲† Bauer-Smith Dredging Co., Inc., Box 88, Port Lavaca, Tex., LB $1,707,552, dredging Port Aransas-Corpus Christi Waterway, Bay Sec., Main Turning Basin, Industrial Canal, Avery Point Turning Basin and Tule Lake Channel, Corpus Christi, Nueces Co. ENG-41-243-59-41. TEXAS, U. S. Eng., Santa Fe Bldg., Galveston, Tex. Bids Feb. 3. CD 1-21.

York Maintenance Co., Box 12385, Houston, Tex. LB $748,475, (combined) comprising entire proj. of 12 zones for Sched. 1 and 2, Iron Bridge Reservoir Clearing, near Wills Point, LB $367,583, Sched. 1, Iron Bridge Reservoir clearing of 6 zones covering southwest half of reservoir near Wills Point, LB $380,892, Sched. 2, Iron Bridge Reservoir clearing comprising remaining 6 zones north east half of reservoir near Wills Point, TEXAS, Sabine River Auth. of Texas, Box 195, Greenville, Tex. Bids Feb. 4. CD 1-7.

▲ Texas Bitulithic Co., Box 1807, Fort Worth, Tex. LB $1,309,597 (combined work), 30 blocks downtown streets, widen streets, lower sidewalks, install storm sewers (widening 56 ft. and 70 ft. sewer pipe 12 to 60-in.), ABILENE, TEX., City, City Hall, Abilene, Tex. Bids Feb. 5. CD 1-30.

† Farnsworth & Chambers, Inc., P. O. Box 74, Houston, Tex., CA $717,548, est. $764,204, organizational maintenance hangar, Webb Air Force Base, ENG-42-443-59-21, BIG SPRING, TEX., U. S. Eng., 100 W. Vickery, Fort Worth, Tex. Bids Jan. 28. CD 2-3, under LB.

▲ Braselton Constr. Co., Box 4027, Corpus Christi, Tex., CA $1,280,000, est. $1,000,000 (4 bidders), 1 story airport terminal, 5 story tower, CORPUS CHRISTI, TEX., City, City Hall, Corpus Christi, Tex. Bids Jan. 28. CD 1-19.

▲ COLORADO, State Hy. Dept., 4201 East Arkansas, Denver.

Shore-Bailey Constr. Co., 610 South Windemere, Littleton, Colo., CA $1,279,492, est. $1,320,000, and concrete paving 5.091 mi., Colorado Proj. No. 1-BCS-1133-41, Weld Co. Bids Feb. 6. CD 1-28.

BUILDINGS—LB & CA

Hasslen Constr. Co., Ortonville, Minn., CA $609,800, general constr. ELEMENTARY SCHOOL addn., MADISON, MINN., Bd. Educ., Madison, Minn. Bids Jan. 29. CD 2-3, under LB.

Frantz Constr. Co., 329 3 St., Iowa City, Iowa, CA $760,000, JUNIOR HIGH SCHOOL, IOWA CITY, IOWA, Iowa City Community School Dist., Iowa City, Iowa. Bids Jan. 27. CD 12-23.

▲ B. D. Simon Constr. Co., 209 S. 5th St., Columbia, Mo., LB $1,492,800, general contract 4 story, grand floor, limestone, brick, steel, concrete LIBRARY addn. on Campus of University, COLUMBIA, MO., Curators University of Missouri, 11e Jesse Hall, Columbia, Mo. Bids Feb. 5. CD 12-30.

Natkin & Co., 19424 Oak St., Kansas City, Mo., LB $979,800, Base Bid, combination plumbing, heating, ventilating and air-conditioning for library addn., Columbia, Mo.†

▲ Roger Michelson, 602 Old Bonhomme Rd., St. Louis 24, Mo., Owner Builds, $4,000,000, Hazelwood Plaza consisting of twenty-nine 2 story 4-family DWELLINGS, north of US 66 parallel to Graham Rd., HAZELWOOD, MO.

▲ John B. Gutmann Constr. Co., 1301 S. Vandeventer Ave., St. Louis 10, Mo., LB $1,062,000, (10 bidders), general contract 6 story, 85,000 sq. ft., brick, steel, concrete HOSPITAL addn., ST. CHARLES, MO., St. Joseph's Hospital Sisters of St. Mary, 218 Clay St., St. Charles, Mo. Bids Jan. 29. CD 1-6.

▲ H. B. Deal Constr. Co., Inc., 5517 Manchester Ave., St. Louis 10, Mo., CA Est. $1,000,000, 5 story, bsmt., 100x213 ft., APARTMENT, Southeast corner Lindell Blvd. and Taylor Ave., ST. LOUIS, MO., Glick Real Estate Co., Inc., 107 N. 8th St., St. Louis 1, Mo., Sommerich & Wood, 8135 Forsyth Blvd., Clayton 24, Mo., archts.-engrs. CD 12-20-58.

B. A. Green Constr. Co., P. O. Box 25, Lawrence, Kan., CA $613,000, STUDENT UNION BLDG. addn., LAWRENCE, KAN., Bd. Regents, University of Kansas, Topeka, Kan. Bids Jan. 27. CD 1-8.

▲ Grant C. Carpenter Constr. Co., 600 N. Penn St., Oklahoma City, Okla., CA $1,343,571, two married student DORMITORIES, CAFETERIA, TAHLEQUAH, OKLA., Northeastern State College, State Capitol Bldg., Tahlequah, Okla., Haddins, Thompson, Ball & Assocs., Classen Terrace Bldgs., Oklahoma City, Okla., archts. CD 12-9, under LB.

E. Eisenhauer, Box 7056, Corpus Christi, Tex., CA $949,000, SCHOOL, CORPUS CHRISTI, TEX., Tuloso-Midway Ind. School Dist., 1925 Tuloso Hy., Corpus Christi, Tex. Bids Jan. 22. CD 1-28, under LB.

▲† Hal B. Hays Contractors, Inc., 647 Magoffin St., El Paso, Tex., and 1550 E. 62nd St., North Hollywood, Calif., CA $5,949,666, 410 unit Capehart HOUSING, Fort Bliss, ENG-29-008-59-78, EL PASO, TEX., U. S. Eng., Box 1538, Albuquerque, N. M. Bids Nov. 26. CD 12-3, under LB.

John J. Stokes Constr. Co., Box 691, San Marcos, Tex., LB $587,785, est. $400,000, Golden Age HOMES, LOCKHART, TEX., Dist. Bd., Hospitals & Homes, Methodist Church, H. Brasher Weimer, Tex. Bids Jan. 30. CD 1-13.

(Continued on page 230)

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(Continued from page 228)

▲ Farnsworth & Chambers Co., Inc., 3601 Brock St., Houston, Tex., CA $1,200,000, 2 story, 200 room MOTEL-HOTEL, 17 acre site, U. S. Hy. 70, PAMPA, TEX. Pampa Hotel Civic Council, Wm. J. Smith, Hotel Counsel, Pampa, Tex. CD 2/25/57.

M. D. Misso Constr. Co., 254 Hickory St., Paris, Tex., CA Est. $750,000, rubber manufacturing PLANT unit, PARIS, TEX. Pennsylvania Tire Co., Subsidiary, Mansfield Tire & Rubber Co., 515 Newman St., Mansfield, O. CD 2/10.

▲ Denton & Karren Co., Inc., 1042 Mission Bldg., San Antonio, Tex., Owner Builds, $1,090,750, 75 DWELLINGS, SAN ANTONIO, TEX. CD 1/12.

▲ Western-Knapp Engineering Co., 650 5 St., San Francisco, Calif., CA Est. $3,000,000, design and constr. URANIUM PROCESSING MILL, Gas Hills area, 50 mi. east of Riverton, WYOMING. Federal Uranium Corp., Riverton, Wyo. CD 1/14.

Weber Constr. Co., 702 E. 15 St., Cheyenne, Wyo., CA $993,000 (4 bidders) 5 story, reinf. con. BANK-OFFICE, CHEYENNE, WYO. American National Bank, 1602 Capitol Ave., Cheyenne, Wyo. Bids Feb. 4, awarded Feb. 5. CD 1/15.

▲ F. J. Kirchhof Constr. Co., 700 Lawrence, Denver, Colo., CA Approx. $1,000,000, 5 story, tenant, penthouse 85 x 115 ft., STORE, DENVER, COLO. Redding-Miller, 931 E. 6 Ave., Denver, Colo. Neusteffers, 720 16 St., Denver, Colo., lessee. CD 1/6, under CA.

▲† H. A. Lott, Inc., Box 25005, Houston 5, Tex., and Box 809, Los Alamos, N. M., LB $1,167,599 (4 bidders), POWER REACTOR TEST BLDG. and appurtenances, Inc. No. 291-59-4, LOS ALAMOS, N. M. Atomic Energy Comm., Contr. Div., Los Alamos Office, Los Alamos, N. M. Bids Jan. 29. CD 1/7.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
March 18, 26 California

† Idaho, Arco AREA HUT, 0.1 mi. SW., BA, DF, Apprx. $ 1.3, Atomic Energy Comm., Idaho Operations Office, P. O. Box 2118, Idaho Falls, Idaho. Materials handling and maintenance bldg., National Reactor Testing Station, $760,000. CD 12/21/56.

▲† Calif., Lompoc TRAINING BASE, CA, LS, BA, Apprx. $ 1.3, 2 units, 2 story, reinf. con., Naval Training Base, Pt. Arguello, Lompoc, Calif. Naval Civil Engineer Corps, Officer in Charge, Construction, Naval Base, Coronado, Calif. CD 1/2.

▲ WASHINGTON, BA, $ 24, Washington Toll Bridge Auth., Olympia, floating section of second Lake Washington Bridge, east of Seattle, $20,000,000. CD 1/21.

BUILDINGS—BA

Calif., Merced JAIL, BA, $ 1, Merced County, County Bldg., 2 story, concrete, 22nd St., $850,000. Plans deposit $50. Paul Hunter & Assoc., 1721 M St., Merced, Calif. CD 1/2.

▲ Calif., Fresno SPEECH-DRAMA, BA, $ 1.7, State Div. Architecture, 1120 N. St., Sacramento, 76,100 sq. ft., reinf. con., concrete block, masonry, speech-drama bldg., Fresno State College, W.O. 8100-GC 42, $1,240,000. Plans deposit $100. CD 2/24.

▲ Wash., Renton HOUSING, BA, $ 1.2, Western Housing Auth., twenty-six 2 story, flat roof houses, 1 story, 180 unit, $3,000,000. Plans, deposit $75. Wm. W. Stanley, Haugand & Jacobs, 1423 Howard, Ave., N., Seattle, Zone 2, & Hy. CD 1/21.

▲† Alaska, Clear TECHNICAL, BA, $ 20, 1 bldg., Antenna, 2 technical, 1 dormitory, Clear Air Force Station, CD 12/26.

BUILDINGS—SLC

Calif., Loma Linda COLLEGE, ONE-STORY, Type I, reinf. con., frame, stucco college, $500,000. Architects & Engineers, 1 Loma Linda Blvd., Loma Linda, Calif. CD 1/14.

HEAVY CONSTRUCTION—LB & CA

▲† B-E-C-K Constructors, McLaughlin, Inc., Rader Kiel, Inc., and Morrison Knudsen Co., Inc., 1447 S. Weller, Seattle 1, Wash., LB $8,664,751, est. $9,628,489 (8 bidders), Phase III, Sandia Base, Albuquerque, Inc. 59-12, SHUMYA, ALASKA. Ltr. Cdr., P. O. Box 7002, Anchorage, Alaska. Bids Feb. 24. CD 2/1.

ARIZONA, State Hy. Dist., 206, S. 12 Ave., Phoenix, Copper State Constr. Co., 46 BN, 11, Grand Mesa, A. 2, CA $644,106, grading, draining roadway and incidental construction, U.S. Rte. 89 Alternate, 1 mi. south of Flagstaff and extending northerly, 2.1 mi., and part of State Rte. 79 for approx. 2.5 mi. northeast of Flagstaff Hy. Concrete, Cd. Bids Jan. 27.

▲ Goodfellow Bros., Inc., P. O. Box 366, Wenatchee, Wash., LB $2,024,332 (7 bidders), removing 7.8 mi. Okanogan Branch, Great Northern Ry. Wy. 3 mi. State Hy. 10 and 2.5 mi. county road for Rocky Reach Dam project, WASHINGTON, Chelan County Public Utility Dist. No. 1, 327 N. Wenatchee Ave., Wenatchee, Wash. Bids Feb. 6. CD 1/15.

▲ A. J. Cheff Constr. Co., 10054 W. Marginal Way, Seattle, Wash., and G. H. James, 4901 N. Newport, Oklahoma City, Okla., CA $1,062,200, est. $1,284,110 (10 bidders), 8½ x 8 ft., 8,730 ft. long, partly concrete-lined water diversion tunnel, BELLINGHAM, WASH. City, City Hall, Bellingham, Wash. Bids Jan. 23. CD 1/28, under LB.

▲ CALIFORNIA, State Div. Hys., 1120 N. St., Sacramento,

A. Teichert & Son, Inc., 1931 Stockton Blvd., Sacramento, Calif., CA $4,787,742, grading, paving, 7.8 mi. 4 lane freeway and constr. 3 traffic separation bridges, U.S. Hy. 40 between 0.7 mi. east of Baxter and 0.6 mi. west of Emigrant Gap, 111-Pla-37-D, E; Placer Co. Bids Jan. 28, awarded Feb. 6. CD 1/29, under LB.

▲† Manderbach Constr. Co., 1837 Victory Blvd., Glendale, Calif., CA $1,380,000, maintenance hangar, Naval Air Missile Test Center, Spec. 19545-58, POINT MUGU, CALIF. Dist. P. Wks. Office, Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids Jan. 21, awarded Feb. 4. CD 1/27, under LB.

Harrod & Williams Co., 240 South Murphy Ave., Sunnyvale, Calif., LB $509,736 (10 bidders), Contr. 217, Pier B addn., San Francisco International Airport, SAN FRANCISCO, CALIF. City and San Francisco County Pub. Utility Comn., City Hall, San Francisco, Calif. Loubet & Glynn, 400 Montgomery St., San Francisco, Calif., archts. CD 11/9/56.

BUILDINGS—LB & CA

▲ Alfred Brown Co., Dooly Bldg., Salt Lake City, Utah, LB $1,928,000, 12 story, OFFICE for State of Utah, N.E. of Capitol or on a downtown site, SALT LAKE CITY, UTAH. State Bldg. Bd., 419 State Capitol, Salt Lake City, Utah. Bids Feb. 6. CD 1/26.

▲ Lembke Constr. Co. of Nevada, 1927 Freemont St., Las Vegas, Nev., CA $1,085,098, FINE ARTS BLDG., University of Nevada, RENO, NEV. State of Nevada Planning Bd., Telegraph Bldg., 11 W. Telegraph St., Carson City, Nev. CD 2/3, under LB.

▲† Inland Empire Bldrs., Inc., Box 4055, H. C. Station, Riverside, Calif., J. C. Boespflug Constr. Co., 1912 4 Ave. S., Seattle 4, Wash., and McLaughlin, Inc., Great Falls, Mont., LB $13,740,678, est. $15,278,396 (5 bidders), 856 unit Cadenat HOUSING, Inc. 45-118-59-40, FORT LEWIS, WASH. U.S. Eng., 1514 Alaskan Way, Seattle 4, Wash. Bids Feb. 5. James Lovegreen, Helms & Jones, Republic Bldg., Seattle, Wash., archts. CD 12/19.

Todd Bldg. Co., Box 27, Roseburg, Ore., CA $760,446, JUNIOR HIGH SCHOOL, NORTH BEND, ORE. Coos County School Dist. 13, North Bend, Ore. Bids Jan. 14, awarded Jan. 19. CD 1/21, under LB.

James S. Kickey, 523 S.E. Stark St., Portland, Ore., LB $952,755 (11 bidders), 165 NURSES HOME WINGS, PORTLAND, ORE. Emanuel Hospital, 2801 N. Gantenbein St., Portland, Ore. Bids Feb. 2. CD 1/12.

▲† Hal B. Hayes & Assocs., 1245 Sierra Alta Way, Los Angeles, Calif., LB $6,392,777 (5 bidders), addn., 400 CAPEHART HOUSING units, Increment No. 2, BEALE AIR FORCE BASE, CALIF. Base Procurement Office, Beale Air Force Base, Calif. Bids Feb. 10. CD 1/22.

Merco, Inc., 6052 Venice Blvd., Los Angeles, Calif., CA $649,800, est. $600,000, SCIENCE BLDG., CLASSROOM BLDG., and alterations, COMPTON, CALIF. Compton Junior College Dist., 1111 E. Artesia Blvd., Compton, Calif. Bids Jan. 14, awarded Feb. 4. CD 1/21, under LB.

▲ George Pollard Co., 20 Palm Ave., Larkspur, Calif., CA $1,500,000 (1) metal roof panels, Haddite Block, STEEL BLDG., (2) 150 x 160 ft. SUPERMARKET, SERVICE STATION and parking lot on Redwood Dr., SOUTH MADERA, CALIF. Wilbur James, 25 California St., San Francisco, Calif., and Alex Rose, Santa Rosa, Calif.

R. & W. Warco, Inc., 5634 N. Rivermed Blvd., Temple City, Calif., Owner Builds, $685,108, forty 1,575 sq. ft. frame, stucco DWELLINGS, Tr. 2638, Lot 43, T. 3, N. GARDEN GROVE, CALIF.

▲ Steed Bros., 714 Date Ave., Alhambra, Calif., LB $1,086,900 (12 bidders), 1 story, 57,000 sq. ft. reinf. con. POLICE and JAIL BLDG., GLENDALE, CALIF. City, 614 E. Broadway, Glendale, Calif. Bids Feb. 10. CD 12/11.

▲ Heyniger Constr. Co., Box 486, Lemon Grove, Calif., CA $1,706,300, 151 frame, stucco DWELLINGS, La Cresta, Main St., El Paseado Ave., LEMON GROVE, CALIF. Lee Arter Co., Box 486, Lemon Grove, Calif.

▲ Barrett Constr. Co., 1800 Evans St., San Francisco, Calif., LB $6,277,500, general constr., 4 story, basement and footings, 5th floor steel frame with brick masonry and glass exterior, HOSPITAL, MOUNTAIN VIEW, CALIF. El Camino Hospital Dist., 675 Castro St., Sunnyvale, Calif. Bids Feb. 4. CD 12/19.

▲ Marvin E. Collins Co., 5645 San Diego St., El Cerrito, Calif., CA $1,394,000, 2 story, JUNIOR HIGH SCHOOL, LAS LOMAS, CALIF. Lakeland Village Joint School Dist., 1021 2nd Ave., Lakeland Village, Calif. Awarded Feb. 2. CD 1/27, under LB.

▲ Rothschild, Raffin & Wernick and Continental Constr. Co., 1234 Brannan St., San Francisco, Calif., CA $2,348,000, six 4 story, reinforced brick, concrete STUDENT RESIDENCE HALLS, San Jose State College, W.O. ASC-72, SAN JOSE, CALIF. State Div. Architecture, 1120 N. St., Sacramento, Calif. Bids Jan. 20, awarded Feb. 10. CD 1/26, under LB.

▲ Herbert Goldsworthy, 333 Santa Monica Blvd., Santa Monica, Calif., LB $1,969,000 (8 bidders), LIBRARY, CAFETERIA and PHYSICAL EDUC. BLDGS. at Santa Monica City College, SANTA MONICA, CALIF. Santa Monica Unified School Dist., 1723 4th St., Santa Monica, Calif. Bids Feb. 9. CD 1/21.

Virgil Baker, 1675 Amberwood Dr., Pasadena, Calif., CA $674,000, six 2 story APARTMENTS, 400-410 Ramondale Ave., SOUTH PASADENA, CALIF. Merton H. Baker, 21122 Mesa Rica Covina, Calif. Rochlin & Baran, 717 N. La Cienega Blvd., Los Angeles, Calif., archts. Awarded Feb. 4.

McNeil Constr. Co., 5858 Wilshire Blvd., Los Angeles, Calif., CA $900,000, three 2 story, 73x219 ft. metal OFFICE BLDGS., 8500 Balboa Blvd., VAN NUYS, CALIF. Electronics Products Co., 11819 W. Olympic Blvd., Los Angeles, Calif. Nelson Rice, 12401 Ventura Blvd., Studio City, Calif., archt.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 11 Ontario
STREETS AND ROADS
March 11 Ontario

HEAVY CONSTRUCTION—LB & CA

ALBERTA, Dpt. P. Wks., Hunter Bldgs., Ottawa, Ont., Standard Gravel & Surfacing of Canada Ltd., 5340 First St. SW., Calgary, Alta., CA $815,160, crushed pit concrete gravel, MILE 0 to Mile 80, Trans Canada Hy., Banff and Yoho National Parks, 48-58-TCH-BY1, Banff. Bids Jan. 8, awarded Feb. 3. CD 1/16, under LB.

▲ ONTARIO, Dpt. P. Wks., Hunter Bldgs., Ottawa, Ont., Bids opened 2/3/57.

Bridge & Tank of Canada Ltd., Box 325, Hamilton, Ont., LB $3,684,395 (11 bidders) superstructure, Burlington Canal Lift Bridge over Burlington Channel entrance to Hamilton Harbor, Hamilton, C.C. Parker & Assocs., Ltd., 795 Main, St. W., Hamilton, Ont., engrs. CD 12/5.

Canadian Engineering & Contg. Co. Ltd., 25 Highson St. So., Hamilton, Ont., CA $787,739, Civic Stadium enlargement, Beachwood Rd., HAMILTON, ONT. Bd. Parks Management, 1072 Main St. E., Hamilton, Ont. Awarded Feb. 3. CD 2/4, under LB.

▲ S. McNally & Sons Ltd., P. O. Box 157, Postal Station C., Hamilton, Ont., LB $1,790,911, Cont. B, road work, Queen Elizabeth Way connections, HAMILTON, ONT. City of Hamilton, City Hall, Hamilton, Ont. CD 5/21/56.

▲ McNamara (Quebec) Ltd., 4901 Namur St., Montreal, Que., CA $1,772,275, Pier Sections 54 to 56, Montreal Harbor, MONTREAL, QUE. National Harbours Bd., West Block, Parliament Bldgs., Ottawa, Ont. Awarded Feb. 3. CD 1/15, under LB.

BUILDINGS—LB & CA

▲ Marine Bldg. Ltd., sub. of British Pacific Ltd., 355 Burrard St., Vancouver, B. C., CA Est. $5,000,000, 20 story, 150,000 sq. ft. OFFICE, southeast corner 7th Ave. and 14th St. N.W., CALGARY, ALTA. Lord Dyngh Group, Exp. Rule, Wynn & Rule, archts., 928 12th St. S.W., Calgary, Alta. CD 10/10.

▲ Leadway Apartments, Ltd., 835 Roselawn Ave., Suite 103, Toronto, Ont., Owner Builds, $1,433,400, LOW RENTAL HOUSING, 4 bldgs., 2 having 84 suites, one 84 and other 80 suites, south side Wilson Ave. near Ridge Rd., TORONTO, ONT. CD 1/8.

Duroc Constr. Inc., 210 Cremazie Blvd. W., Montreal, Que., CA Est. $650,000, 9 bldgs., 2 story, basement, 170 x 286 ft., Portland, brick, reinf. con. SCHOOL, Rockland Ave., MONT-ROYAL, QUE. La Commission scolaire de Mont-Royal, Mont-Royal, Que. Bids Jan. 30, awarded Feb. 3. CD 1/24.

▲ Concordia Development Corp., 346 Jean Talon St., W., Montreal, Que., Owner Builds, $1,950,000, 350 unit HOUSING, off Hy. 4, ST. JACHIM DE CHATEAUGUAY, QUE. H. M. Tolchinsky, 5810 Cote St. Luc Rd., Montreal, Que., archt.

Prudential Constr. Co., Inc., 346 Jean Talon St., W., Montreal, Que., Owner Builds, $650,000, 80 unit HOUSING, Provincial Hy. No. 4, ST. JOACHIM DE CHATEAUGUAY, QUE. H. M. Tolchinsky, 5810 Cote St. Luc Rd., Montreal, Que., archt.

▲ Leo Lambert, 1072 Pere Frederic St., Three Rivers, Que., Owner Builds, $2,000,000, eight 2 and 4 story, concrete block and brick APARTMENTS, Les Plateaux, Three Rivers, Que.

▲ Riverside Housing & Land Corp., 4555 Lambert Closse Rd., Montreal, Que., Owner Builds, $1,750,000 HOUSING, Riverside Dr. at Provost St., VILLE DE CHATEAUGUAY, QUE.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

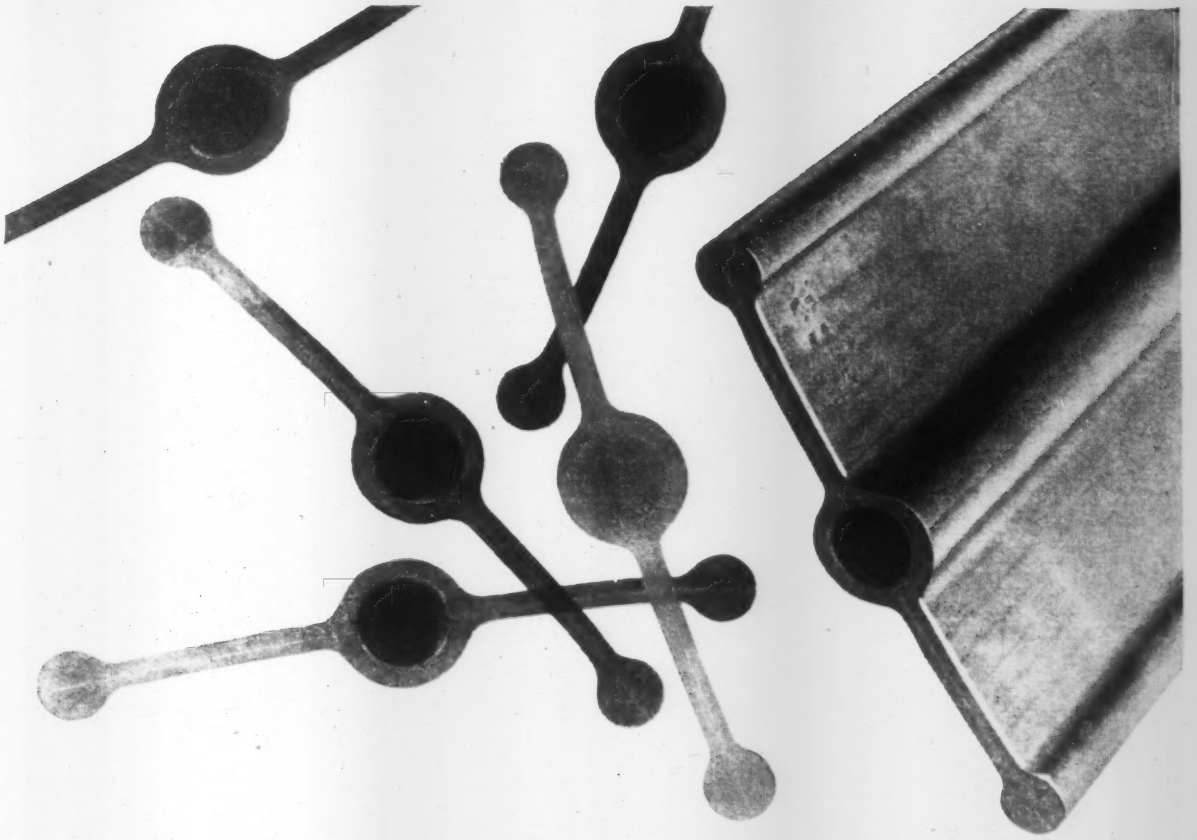
▲ ARGENTINA—BA, $ 1, Water & Power Bd., Tucuman, Sumampa-Cano Lavelle, 1556, Buenos Aires, 1,130 ft. bridge over Santa Cruz River, Santa Cruz, $1,000,000.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ E. I. duPont de Nemours & Co., DuPont Bldg., Wilmington 98, Del., U.S.A., Own Forces, orlon acrylic fiber PLANT, DORDRECHT, THE NETHERLANDS.

(Proposal Advertisements see pp. 234 to 236)



new rubber Aquastop provides

permanent watertightness under hydrostatic pressure

New rubber AQUASTOP has been engineered in material and design to withstand the contraction, expansion and shearing movements of concrete construction*—and continue to provide absolute water control under hydrostatic pressure.

AQUASTOP's high tensile strength resists distortion during installation; and its flexibility and elasticity virtually eliminate the fatigue problems so often encountered in less-efficient materials.

Manufactured in various grades of natural rubber, standard G.R.S. rubber and Neoprene, AQUASTOP is available in standard sizes in flat and split dumbbells, centerbulb and split centerbulb types—with a full choice of molded ells, crosses, tees, unions and other accessories.

If the quality of your next installation depends in part on the quality of the waterstop used in the joints, depend on Presstite Rubber AQUASTOP.

*E.g., AQUASTOP 9" Centerbulb Type will withstand 5" deformation created by lateral contraction or shearing action.

WRITE Dept C-8 for illustrated literature

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ENGINEERING PRODUCTS
COMPANY

K A P

A DIVISION OF AMERICAN-MARIETTA COMPANY • 3740 CHOUTEAU AVE. • ST. LOUIS 10, MO.

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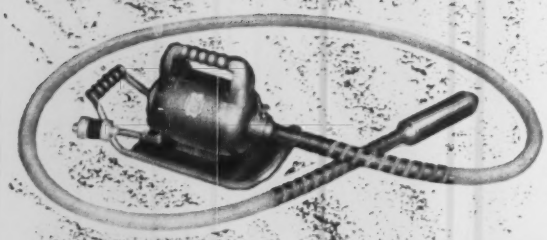
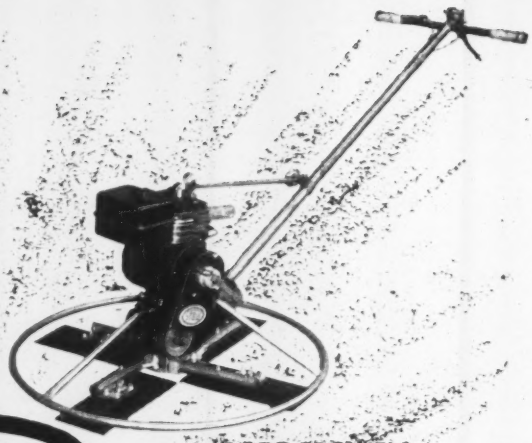


VIBRATORS



ROTO-TROWELS

STOW

for DEPENDABLE

Into each unit of STOW-built construction equipment goes years of research in the field, months of testing new designs on the job, plus 80 years of STOW engineering know-how. STOW maintains close contact with contractors, keeping abreast of their current problems . . . incorporating their needs into the STOW line of construction equipment.

Every day more contractors rely on STOW Concrete Construction Equipment for the dependable service and the performance today's contracts demand.

When you order concrete construction equipment, specify STOW, for top performance *without* expensive maintenance.

Look up your nearest STOW distributor under "Concrete Vibrators" in the yellow section of the telephone directory.

GRINDERS

VIBRATING SCREEDS

STOW

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19 Shear Street, Binghamton, N. Y.

I'm interested in the STOW LINE of Concrete Construction Equipment. Send complete catalog and name of nearest distributor. I am particularly interested in .....

Name ..... Title .....

Company .....

Street .....

City ..... State .....

Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last, Jan. 29; Next, Feb. 26.
- Cement, Aggregates, Ready-mixed Concrete, Asphalt: Last, Feb. 5; Next, Mar. 5.
- Wage Rates, Building Board, Lath, Insulation: Last, Jan. 29; Next, Feb. 26.
- Iron & Steel Products, Pipe: Last, Feb. 12; Next, Mar. 12.

LUMBER, TIMBER, PLYWOOD—PER M FT., B. M., CARLOAD LOTS F. O. B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2. Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in italics)

		1x6 S4S	1x8 S4S	2x4 S4S	2x6 S4S	2x8 S4S	2x10 S4S	3x12 Rgh	6x12 Rgh	12x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 2x12 Rgh	12x12 Rgh	FIR PLYWOOD ¾" Interior plyscored, C-D gr.	¾" Ply-form grade*
Atlanta	n†	$73 00	$76 00	$76 00	$79 00	$81 00	$86 00	$136 00			$121 00	$156 00	$135 00	$216 00
Baltimore	n‡	95 00	100 00	100 00	100 00	100 00	105 00	114 00			170 00	185 00	165 00	235 00
		108 00g	*108 00g*	*108 00g*	*108 00g*	*108 00g*	*108 00g*	*108 00g*	*$155 00*	*$139 00*				
Birmingham	n†‡	80 00	82 00	79 00	82 00	85 00	90 00	105 00			115 00	160 00	138 29	224 49
		79 50	*79 50*	*79 50*	*79 50*	*79 50*	*88 00*	*75 50*	*79 50*	*79 50*				
Boston	n§	96 00	98 00	103 00	103 00	103 00	103 00a						180 00	305 00
		98 00	*98 00*	*118 00*	*118 00*	*118 00*	*118 00*	*154 00*	*154 00*	*154 00*				
Chicago	**	115 00	118 00	112 00	126 00	134 00	135 00	130 00			158 00	158 00	168 00	278 00
		122 00	*122 00*	*138 00*	*138 00*	*138 00*	*138 00*	*122 00*	*122 00*	*122 00*				
Cincinnati	*	93 00	94 25	86 50	90 50	95 00	102 75	116 00			129 50	127 50	106 00	195 00
		95 75	*98 00*	*100 50*	*100 50*	*100 50*	*116 75*	*129 75*	*129 75*	*129 75*				
Cleveland	o**	88 00	90 00	97 00	98 00	100 00	105 00						138 00d	232 00d
		90 00	*90 00*	*105 00*	*105 00*	*105 00*	*105 00*	*121 00*	*121 00*	*121 00*				
Dallas	‡	74 50k	74 50k	72 00k	72 00k	74 50k	75 50k	120 00k			130 00	125 00	112 50e	196 00e
Denver	*	*Not in stock*												
Detroit	‡	127 50	130 00	126 75	128 00	133 00	133 00				141 00		180 00	270 00
		130 00	*130 00*	*138 75*	*138 75*	*138 75*	*138 75*	*130 00*	*130 00*	*130 00*				
Kansas City	‡	125 00	125 00	125 00	125 00	130 00	140 00						155 00	235 00
		125 00	*125 00*	*125 00*	*125 00*	*125 00*	*125 00*	*160 00*	*885 00*	*885 00*				
Los Angeles	n‡	*94 00*	*94 00*	*94 00*	*94 00*	*94 00*	*94 00*	*184 00*	*151 00*	*151 00*			135 00	235 00
Minneapolis	o‡	*185 00m*	*185 00m*	*185 00*	*185 00*	*185 00*	*185 00*	*185 00*	*185 00*	*185 00*			190 00	310 00
Montreal	*‡p	87 00a	94 00a	87 00a	88 00a	104 00a	125 00a				122 00	122 00	119 25	225 95
		105 00	*105 00*	*105 00*	*105 00*	*105 00*	*105 00*	*170 00*	*170 00*	*170 00*				
New Orleans	†	89 00	89 00	93 00	91 00	90 00	97 00	121 50			151 00	151 00	122 41	201 00
	†	*115 00*	*115 00*	*115 00*	*115 00*	*115 00*	*115 00*	*157 50*	*157 50*	*157 50*				
New York	‡	112 00	113 00	120 00	122 00	122 00	127 00				240 00	250 00	135 20d	240 60d
		128 00	*128 00*	*128 00*	*128 00*	*128 00*	*128 00*	*165 00*	*165 00*	*165 00*				
Philadelphia	‡		Range from 100 120				105 125	105 125			214 224	214 224		
			Range from 110 120				*105 125*	*105 125*	*158 00*	*158 00*				
Pittsburgh	†	115 00	120 00	130 00	120 00	125 00	130 00	150 00			150 00	185 00	190 00	295 00
		120 00	*120 00*	*120 00m*	*120 00*	*120 00*	*120 00*	*880 00*	*185 00*	*185 00*				
St. Louis	n‡	121 00	123 00	131 00d	131 00d	131 00e	136 00e						179 72d	207 80d
				139 00e	*139 00e*	*139 00e*	*141 00e*	*195 00e*	*195 00e*	*195 00e*				
San Francisco	n‡	*96 00*	*96 00*	*96 00*	*96 00*	*96 00*	*96 00*	*168 00*	*181 00*	*181 00*			110 00	205 00
Seattle	†	*95 00*	*95 00*	*92 00*	*92 00*	*92 00*	*92 00*	*95 00*	*95 00*	*95 00*			126 00d	220 00d
Toronto	*	92 50a	93 50a	93 75a	86 00a	89 00a	89 00a	99 00a			90 00a		245 00	290 00
		108 00	*108 00*	*118 00*	*118 00*	*118 00*	*118 00*	*155 00*	*181 00*	*181 00*				

(* F.o.b. mill. ** F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. (Retail, LCL, deliv; 2. Deliv. truck lots. 3. asd., truckload lots, 5. 6 Mfbm. 4. Pine trucklots, f.o.b. city; fir truck lots, f. o. b. yard. 5. For f. o. b. city price, add approx. $8 for pine, $35.00 for fir.

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. *a Spruce. *b Federal tax exempt, add 6% mun. & prov. tax. *c 5M lots. *d 8, 10, & 12 ft. lengths. *e 8 to 16 ft. lengths. *f Hemlock. *g No. 1 common. *j 8 ft. lengths. *k No. 3 common. *l Add 2% sales tax. *m Up to 16'; No. 3 western pine, $125. *n Less 2% disc. 10 days. *o Less 2% disc. 10th. *p Less 1% disc. 10 days. * q fir; $80.25 in truck lots, fob job or CL, fob city.

* PLYWOOD: Plyform, oiled and edge sealed: Douglas fir, 4' x 8' panels, 5-ply sanded 2 sides, carload lots, delivered per 1000 sq. ft. surface. Seattle base price, Interior, moisture resistance, ¾", $191.00; ¾", $201.00. Exterior, waterproof, ¾" $185.00; ¾", $205.00 *a Delivered. *b Price may increase this month. *c Truck lots. *d A-C exterior. *e LCL.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a Single or Double Strength A quality	B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*	
Atlanta	78%c	79%k	$0.2615	
Baltimore	74%d	76%d	.2615	
Birmingham	82%e	82%e	.2465	
Boston	72-10%	72-10%	.2615	
Chicago	72%	72%	.2615	
Cincinnati	74%	74%	.2615	
Cleveland	74-2-10%	74-2-10%	.3015	
Dallas	76%	76%	.2690	
Denver	73.5%	73.5%	.2665	
Detroit	74-10-10%	74-10-10%	.2615	
Kansas City	76-10-10%	76-10-10%	.2665	
Los Angeles	76%	76%e	.2640	
Minneapolis	71-10%	71-10%	.2665	
Montreal	40-6.5%br	40-10.5%	23.45A	
New Orleans	76%g	76%g	.2665	
New York	79%j	79%j	.45g	
Philadelphia	74-10%	75-10%	.2615	
Pittsburgh	72%	72%	.2615	
St. Louis	72-10-10%	72-10-10%	.2665	
San Francisco	60%	73%	.2615	
Seattle	$8.85 11.55bi	$8.41 8.67bj	.2640	
Toronto	4.49	5.90		

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Glass: *a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b sales tax extra. *c 77% for single strength. *d From 6.15.52 list. *e 77% for double strength. *f Single strength; double strength, 83%. *g From 8.1.58 list. *h Ss, ds, 40-in. *i 20 boxes min. *j CL quantity. *k eff. 12.58. *l eff. 10.15.58.

Explosives: * Cartridges of 1¼" diameter or over, in standard lengths. *g deliveries in certain areas must be by truck or by truck and boat, requiring extra charge. *h F.o.b. Beloeil (near Montreal), per 100 lb., lots under 2000#, wood cases, forcite, 40%. Forcite 60%, $23.80 to fiber cases: forcite 40%, $23.20; forcite 60%, $24.95.

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades):

	C. L. 30,000 lb. lots	20,000 lb. lots	2,000 lb. lots	2,000 lb. lots
Group 1*	$0.2615	$0.2665	$0.2765	$0.2915
Group 2‡	.2965	.3140	.3340	.3690

* All areas except those in Group 2 and N. J. cities of Bayone, Hoboken, Jersey City, No. Bergen, Union City and Weehawken. ‡ Florida counties of Manatee, Hardee, Highlands, Okeechobee, St. Lucie and south thereof; Idaho; Maine; Montana; New Mexico counties of Catron, Socorro, Lincoln, De Baca, Roosevelt and south thereof; Texas counties of Bailey, Lamb, Hale, Floyd, Motley, Cottle, Hardeman, Foard, Knox, Haskell, Jones, Taylor, Coleman, McCulloch, San Saba, Burnet, Williamson, Milan, Robertson, Leon, Houston, Angelina, Nacogdoches, Shelby and south thereof.

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	...
12-in.—2-ft. from butt	6-in.	50 to 59-ft.	.54	...
12-in.—2-ft. from butt	6-in.	60 to 69-ft.	.58	...
12-in.—2-ft. from butt	6-in.	90 to 100-ft.	...	...
13-in.—3-ft. from butt	5-in.	91 to 100-ft.	...	...
14-in.—2-ft. from butt	6-in.	50 to 69-ft.	.50/.68	...
14-in.—2-ft. from butt	6-in.	70 to 79-ft.	.78/.88	.93
14-in.—2-ft. from butt	5-in.	80 to 85-ft.	.88/.93	.94
14-in.—2-ft. from butt	5-in.	85 to 89-ft.	...	1.00
14-in.—2-ft. from butt	5-in.	90 to 100-ft.	...	1.02

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie box carload lots:

		6" x 8" x 8' Untr.	6" x 8" x 8' Tr.	7" x 8" x 8'6" Untr.	7" x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.75
Chicago	Red Oak		3.80a		4.40a
New York	N. L. Sap Pine	2.00	4.00	3.00	6.00g
	Mixed Oak	2.50	4.50	3.50	6.50g
Philadelphia	Red Oak	2.85/4.05	4.40/4.60	3.20/3.40	4.40/4.60
St. Louis	Mixed Oak	2.65	3.40a	2.90d	3.75aA
San Francisco	Douglas Fir	2.12e	3.10ef	2.90ef	4.52a

Tr., Treated; Untr., Untreated. a Creosoted. Empty cell, g Green f.o.b. cars. g 7" x 9" x 8'6". * Add 75c tie freight charge to Birmingham. *h 7" x 9" x 9'6".

CHEMICALS

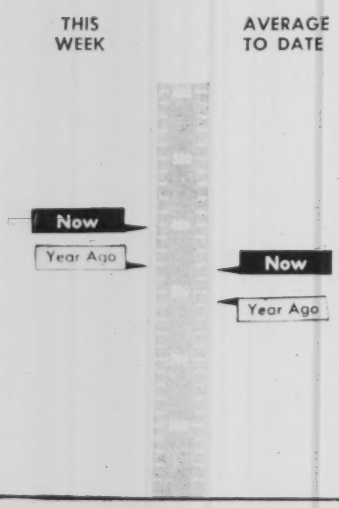
Water, sewage treatment, road work, f.o.b. carlots, New York

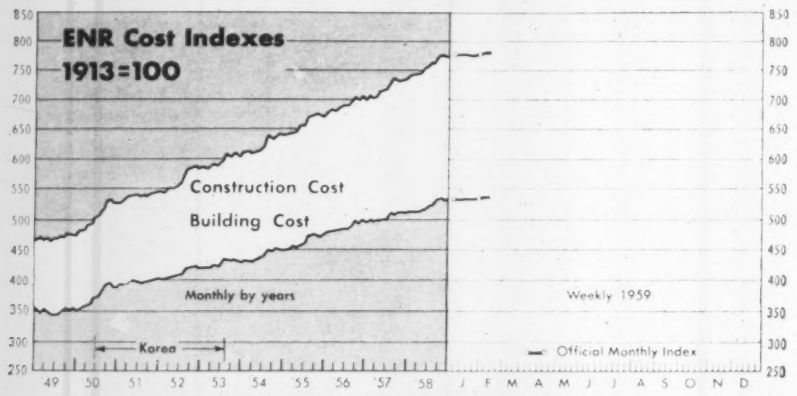
Bleaching powder in drums f.o.b. works, per 100 lb	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.11
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	31.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.65
Soda ash, 58%, in paper bags, per 100 lb. dense	1.90
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	2.05
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	21.20

Construction Scoreboard

CONTRACTS ...

Millions of Dollars





CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of Feb. 2 1959	% Change from Jan. 15 1959	% Change from Feb. 12 1958
Construction Cost	779.84	+0.2	+4.8
Building Cost	538.34	+0.3	+4.4

To convert above indexes to 1926 = 100: Divide Construction Cost by 2,080; Building Cost by 1,850.
1949 = 100: Divide Construction Cost by 1,770; Building Cost by 3,518.

AMOUNT OF CONTRACTS LET

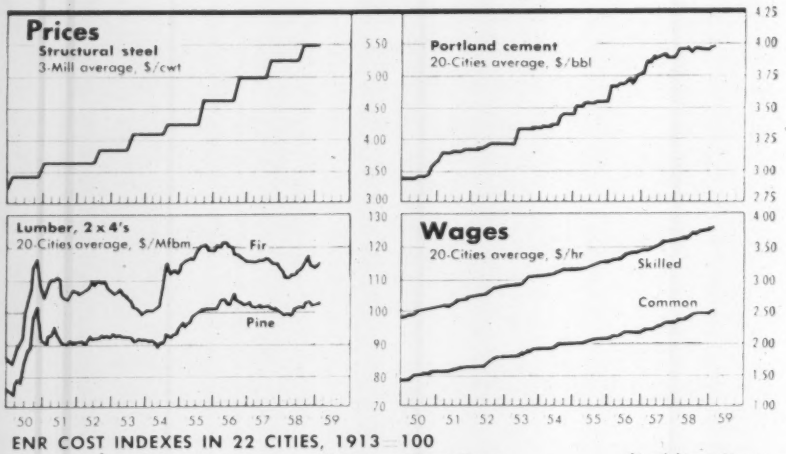
By Ownership	This Week millions	Cum. 8 wks 1959	Chge '58-'59 %
All Heavy Constr.	$398.3	$2,669.9	+25
Private	211.9	1,259.5	+25
Public	186.4	1,410.4	+26
State & Municipal	138.2	997.1	+10
Federal	48.2	413.3	+88
By Type of Work			
Public			
Waterworks	22.1	73.5	+133
Sewerage	11.8	83.9	0
Bridges*	10.1	96.3	+99
Highways	53.5	384.3	+21
Earthwork, Waterways	10.6	82.5	−37
Buildings, Excl. Housing	55.0	380.8	+30
Housing	10.3	73.6	−52
Unclassified	13.1	235.5	+252
Private			
Buildings			
Mass Housing	57.6	524.7	+72
Commercial	61.5	337.0	+43
Industrial	64.7	321.4	−12
Unclassified	28.0	76.4	−24

*Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

. . . CAPITAL

New Capital For Construction	Week of Feb. 12 millions	Cum. 7 wks 1959	Chge '58-'59 %
Corporate Securities	$108.8	$474.8	−30
State and Municipal:			
All Except Housing	97.2	666.3	−36
Housing		1.3	+30
Federal Loans	5.2	12.3	−68
Federal Aid			
Total Nonfederal	$211.1	$1,154.8	−35
Federal Appropriations:			
Projects in U. S.			
Outside U. S.			
Total New Capital	$211.1	$1,154.8	−35



ENR COST INDEXES IN 22 CITIES, 1913 = 100

City	Construction Cost Feb. 1959	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost Feb. 1959	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	594	0	+6.5	474	+0.2	+3.9
Baltimore	711	+0.3	+6.1	543	+0.2	+4.4
Birmingham	622	0	+4.9	495	0	+3.8
Boston	805	−0.2	+5.4	540	−0.9	+3.4
Chicago	863	+0.5	+3.4	566	+0.7	+7.4
Cincinnati	777	0	+4.3	515	0	+2.8
Cleveland	889	0	+4.7	535	0	+3.9
Dallas	573	0	+4.8	472	+0.6	+4.7
Denver	731	+0.1	+2.8	532	0	+1.9
Detroit	892	0	+4.8	574	0	+5.3
Kansas City	768	0	+3.5	533	0	+3.1
Los Angeles	824	0	+6.6	532	+0.4	+4.9
Minneapolis	839	0	+4.5	554	0	+3.2
New Orleans	617	0	+4.9	494	0	+3.3
New York	963	+0.1	+5.8	624	0	+5.2
Philadelphia	791	0	+2.1	570	0	+1.6
Pittsburgh	827	0	+2.9	595	0	+4.6
St. Louis	846	+0.2	+3.9	568	+0.4	+3.8
San Francisco	814	+0.1	+7.4	535	+0.4	+6.4
Seattle	830	+0.4	+5.7	493	+1.4	+5.8
U. S. 20 Cities' average	779	+0.1	+4.7	537	+0.2	+4.1
Montreal	604	0	+3.4	449	0	+0.7
Toronto	639	0	+4.9	480	0	+1.7

OFFICIAL PROPOSALS

Bids: March 5, 1959

Power Authority of the State of New York

For Construction of Buildings, Roads and Utilities for Coles Creek Camping Area near Waddington, St. Lawrence County, New York

Specifications No. PA-5-11046
St. Lawrence Contract No. 52

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for Construction of Buildings, Roads and Utilities for Coles Creek Camping Area near Waddington, St. Lawrence County, New York, until 10:30 A.M., Eastern Standard Time, on the 5th day of March, 1959, at the Authority's office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The estimated quantities of the principal items of work are as follows:

	Required Work	Optional Work
Residence, toilet, toilet and laundry, and control building	4 Buildings	
Foundation Course Gravel	1600 cu. yds.	
Top Course Gravel or Crushed Stone		700 cu. yds.
Bituminous Material		6800 gals.
Reinforced Concrete	40 cu. yds.	
Water and Sewerage Piping	4600 lin. ft.	
Furnish and install buried electrical cable various sizes	17,400 lin. ft.	16,000 lin. ft.
Overhead electrical distribution lines	1000 lin. ft.	

All work shall be completed on or before July 1, 1959.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the total of the gross sum bid.

The right is reserved to make award on Schedule No. 1 alone or on Schedule No. 1 plus any one or any combination of two or of three of the Optional Work Schedules or on Schedules No. 1 plus all four of the Optional Work Schedules and to reject any or all bids, as fully described in the Information for Bidders.

W. S. Chapin
General Manager

Bids: April 28, 1959

Kingdom of Thailand Royal Irrigation Department Bangkok, Thailand

The Royal Irrigation Department of the Kingdom of Thailand requests sealed written bids for furnishing and delivering cif Bangkok Wharf for the Yanhee Multi-purpose Project, Kingdom of Thailand, in accordance with the Contract Documents, including Invitation for Bids—No. YS-3-1, the following equipment:

Two (2) vertical-shaft, alternating current generators, 73,684-kva, 95 percent power factor, 150-rpm, 13,000-volt, 3-phase, 50-cycle, including accessories and spare parts.

Bids will be opened at 10:00 a.m., 28 April 1959. Copies of Contract Documents, including Invitation for Bids—No. YS-3-1, may be obtained by qualified Bidders on written request on Bidder's letterhead, addressed to Royal Irrigation Department, Attention: Thai Liaison Engineer, c/o Engineering Consultants, Inc., 1940 West Mississippi Avenue, Denver 23, Colorado, U.S.A. Each request must be accompanied by a check or money order, payable to the Royal Irrigation Department, in the amount of U.S. $10.00 for each copy of the contract documents requested.

M. L. Nujati Kambhu
Director General
Royal Irrigation Department

OFFICIAL PROPOSALS

Bids: April 2, 1959

New York State Niagara County Water District — Water Supply Project

Sealed proposals will be received by the Niagara County Water District at their office in the Court House, Lockport, New York, up to two o'clock P.M., eastern standard time on the 2nd day of April 1959, for the work described below at the locations indicated:

Contract No.	Description	Length	Plan Deposits
2	River Intake, Raw Water Pump Station and Raw Water Line to Treatment Plant.	3 miles of 36" overland pipe, 1 mile each of 36" and 16" under-river crossings.	$40.00
3	12,000,000 Gallon Treatment Plant.		$50.00
4	Water Supply Mains and Appurtenances.	21 miles of 30" pipe.	$40.00
5	Water Supply Mains and Appurtenances.	14 miles of 24" pipe; 1 mile of 18" pipe.	$40.00
7	Water Supply Mains and Appurtenances.	3 miles of 18" pipe; 4 miles of 14" pipe; 4 miles of 12" pipe; 3 miles of 8" pipe.	$40.00
8	Water Supply Mains and Appurtenances.	13 miles of 10" pipe.	$40.00
9	One Booster Pump Station and a Service Center (Office—Maintenance Building).		$25.00
10	Two 3,000,000 Gallon Reservoirs.		$10.00

The drawings, specifications, and contract documents, under which the work is to be done, are on file and may be examined at the office of Leon H. Wendel, Consulting Engineer, 33 Morrow Avenue, Lockport, New York, and at the office of the Niagara County Water District at the Court House, Lockport, New York. Copies of the contract documents may be secured at the office of the Niagara County Water District on or after February 25, 1959, between the hours of 9:00 A.M. and 5:00 P.M.

The bidder shall deposit the sum indicated when securing the drawings and specifications. This sum will be refunded to the bidder for each set of documents upon which a bonafide proposal is submitted. For others, 50% of the plan deposit will be refunded for each set returned in good condition and within 10 days after bid date.

A certified check or bank draft, for a sum not less than five per cent (5%) of the amount of the proposal, will be required with each proposal payable to the County Treasurer in behalf of the Niagara County Water District.

The right is reserved by the Niagara County Water District to accept any proposal, to reject any or all proposals and to waive any irregularities in the proposals in accordance with the General Municipal Law and the Specifications. No bid may be withdrawn for a period of 30 days after the above date and time for receiving bids.

Each proposal must be enclosed in a sealed envelope addressed to the Niagara County Water District, Court House, Lockport, New York, with the name and number of the contract plainly indicated on the outside of the envelope.

Bruce J. Welton, Chairman Administrative Board
Niagara County Water District

OFFICIAL PROPOSALS

Bids: March 5, 1959

Power Authority of the State of New York

For the Furnishing and Delivery of Structural Steel for the 115 kv & 230 kv Switchyard
Niagara Power Project
Specifications No. PA-N-23020
Niagara Contract No. NP34

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the Furnishing and Delivery thereof f.o.b. destination, of Structural Steel for Structures for the 115 kv and 230 kv Switchyard in Lewiston, Niagara County, New York, until 11:30 A.M. Eastern Standard Time on the 5th day of March, 1959, at the Authority's office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be entertained for the fabrication and delivery of structural steel weighing approximately 440 tons and aluminum weighing approximately 7 tons for the 115 kv structures and structural steel weighing approximately 460 tons and aluminum weighing approximately 4 tons for the 230 kv structures. First delivery will be required beginning October 1, 1959.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the maximum gross sum bid.

The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

Bids: February 24, 1959

Stream Control Works Contract 460

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time on Tuesday, February 24, 1959, for Contract 460, for the construction of the stream control works and portions of the release water structures for the proposed Cannonsville dam. The stream control works will consist of an inlet structure; a diversion conduit, about 1280 feet long and 17 feet 6 inches in diameter, with a transition at each end; and a stilling pool. The portions of the release water structures to be constructed under this contract will consist of a portion of the emergency gate tower, the release water conduit and the substructure for the release water chamber. The release water conduit, about 590 feet long, will be a 12-foot diameter steel pipe, lined with cement mortar, encased in concrete and constructed on top of the diversion conduit. All work shall be as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of The City of New York, in the amount of one hundred thousand dollars ($100,000.00), for the proper execution of the Contract.

Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in the Secretary's office, Room 1312, at the above address, upon application in person or by mail, by depositing the sum of $5.00 for each pamphlet. Within 30 days following the award of contract or rejection of bids the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars apply at the office of the Chief Engineer at the above address.

ARTHUR C. FORD, President; EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners; Board of Water Supply; BETTY COHEN, Acting Secretary.

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OFFICIAL PROPOSALS

Bids: March 12, 1959.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., eastern standard time on the 12th day of March 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 333 Broadway, Albany 1, New York:						
Schenectady	FATC 59-1	City of Schenectady Crosstown Connection, F.A.C.57-18; Schenectady Crosstown Connection Pt. 2, F.A.S.H. 57-20 Project U-323(16)	1.99	Traffic Signal Devices	$1,500 Plans $5	$80,000
Schenectady	FATS 59-3	City of Schenectady Crosstown Connection F.A.C.57-18; Schenectady Crosstown Connection Pt. 2, F.A.S.H. 57-20 Project U-323(17)	1.99	Traffic Signs & Delineators	$600 Plans $5	$11,000
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee Street, Utica 1, New York:						
Hamilton & Essex (Rte. 28N)	FARC 59-15	Long Lake-Grove, S.H. 848; Newcomb-Long Lake Pt. 2, S.H. 5189 Newcomb-Long Lake Pt. 1, S.H. 5188 Project S-210(2)	9.19	Asphalt Conc. Type 1A Pavt. = 9.16 Mi. Misc. Work = 0.03 Mi.	$100,000 Plans $5	$1,764,000
Oneida	FASS 59-6	Henderson Street (Co. Rd.) Project S-537(1)	0.75	Asphalt Concrete Pavement	$12,000 Plans $5	218,000
DISTRICT No. 4, B. E. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York:						
Monroe (Int. Tour. Rte. 490)	FITS 59-2	Interstate Route Conn. 580 (Rochester-Bushnell Basin Pt. 1 and Pt. 2, FASH 54-1 & FISH 56-9 Project I-1107(9)	6.60	Traffic Signs and Delineators	$4,500 Plans $5	$79,000
Wyoming (Rte. 19)	FARC 59-16	Pike-Gainesville, S.H. 8121 Project S-477(3)	4.66	Asphalt Conc. Pavement	$24,000 Plans $5	437,000
DISTRICT No. 6, James H. Thomas, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York:						
Steuben (Rte. 36 & 248)	FARC 59-11	Hornell-Canisteo, S.H. 5212 Canisteo-Jasper, S.H. 5348 Canisteo-Whitesville Pt. 1, S.H. 5537 Project F-367(5); F-477(3)	2.26	Asphalt Conc. Pavement Rehabilitation of 2 Exist. Bridges	$72,000 Plans $5	$1,307,000
DISTRICT 8, Kurt G. Ralfig, District Engineer, Pleasant Valley Road, Poughkeepsie, New York:						
Columbia (Rte. 90)	FARC 59-13	Stottville-S.H. 648 Stottville-Stuyvesant Falls, S.H. 5103 Project F-668(1)	2.44	Asphalt Conc. Pavement	$12,000 Plans $5	$211,000
Ulster (Rte. 28)	FARC 59-17	Ulster-Delaware Pt. 3, S.H. 31 Project F-659(7)	4.27	Asph. Conc. Pavt. = 4.25 Mi. Misc. Work = 0.02 Mi. Prestress. Conc. Beam Viaduct 15 Span 1080'; Prestress. Conc. Beam Bridge 4 Span 223.4'	$128,000 Plans $5	2,324,000
DISTRICT No. 9, Joseph C. Frederick, District Engineer, 71 Frederick Street, Binghamton, New York:						
Otsego (Rte. 166)	FARC 59-14 FASH 59-6	Milford-Roseboom, S.H. 8226; Cherry Valley-Roseboom, S.H. 786; East Springfield-Cherry Valley, S.H. 934; Cherry Valley-Sharon Springs-Sharon Springs-Canajoharie Pt. 1, S.H. 8064 Cherry Valley-Sprout Brook Pt. 1A Project F-385(3)	6.60 (0.16 Ave.)	Asph. Conc. Pavt. = 6.60 Mi. (0.16 Mi. Asp. Conc. on Access Work)	$80,000 Plans $5	$1,452,000
Sullivan (Rte. 17)	T.S. 59-4	Monticello-Liberty, Pt. 2, S.H. 5322 Liberty Village, S.H. 5296 Liberty-County Line, S.H. 5223	6.13 (4.56 Ave.)	Traffic Signs and Delineators	$3,200 Plans $5	57,000
DISTRICT No. 10, M. E. Gould, District Engineer, 325 W. Main Street, Babylon, L. I., New York:						
Suffolk	SSPRC 59-1	Southern State Parkway (Wellwood Avenue to Udalls Rd.)	6.11 (4.67 Ave.)	8" Cem. Conc. Pavt. (With Carbon Black) 2 @ 37' Var. Wide = 5.83 Mi. 8" Cem. Conc. Pavt. Var. Wide = 4.16 Mi. Asph. Conc. Pavt. = 0.26 Mi. Misc. Work = 0.23 Mi. Lengthen 3 Exist. Hy. Seps. Rigid Frame Arches By 1 Span Each 99.3', 99.5' and 66.6'. Widen 2 Exist. Hy. Seps. Rig. Frame Arches 30.0' and 69.2' Spans, 1 Hy. Sep. Rig. Frame Arch 2 Spans 143.2' 1 Br. Rig. Frame Arch 32.2' Span	$100,000 Plans $10	$6,929,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 11, "Prevailing Rate of Wage", Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders, for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5450) will be received at Grand Junction, Colorado, until 10 a.m., Mountain Standard Time, March 17, 1959, for furnishing labor and materials for earthwork and structures, Southside Canal, Station 18+95.46 to Station 114+49, Colbran Project, Colorado. Location south of Colbran, Colorado. Principal items are 818,000 cu. yds. excavation; 3,500 cu. yds. concrete in structures; 7,218 lin. ft. alternative precast-concrete, monolithic-concrete, or steel pipe for siphon barrels; 7,648 lin. ft. precast-concrete culvert pipe, and other work. Completion time October 1, 1960. For particulars, address Bureau of Reclamation, P. O. Box 780, Grand Junction, Colorado; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSAL

RATE: $2.40 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, P. O. Box 12, New York 36, N. Y.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5436) will be received at Fargo, North Dakota, until 10 a.m., Central Standard Time, March 18, 1959, for furnishing labor and materials for stringing conductors and overhead ground wires, Fargo-Granite Falls, 230-Kilovolt Transmission Line, Transmission Division, North Dakota-Minnesota, Missouri River Basin. Location from Fargo, North Dakota to Granite Falls, Minnesota. Principal items are furnishing and stringing 165 miles of three conductors and two overhead groundwires on 230-kilovolt, 3-phase, 60-cycle, single circuit steel tower transmission line and other work. Completion time 270 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; or Building 53, Denver Federal Center, Denver 25, Colorado. W. A. Dexheimer, Commissioner.

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• POSITIONS VACANT

Wanted: Concrete Paving Foreman. At least 5 years experience in highway or airport paving. Location—Ohio. P-9691, Engineering News-Record.

Have opening for several recent Civil Engineer Graduates with military obligations completed who desire to learn the construction business. Ambitious, aggressive, dependable, use no intoxicants, willing to start in the field on industrial buildings and heavy construction, and willing to move. Must be single. We operate throughout Kansas and adjacent states, offer excellent opportunity for advancement. Top wages. Martin K. Eby Construction Co., Inc., P. O. Box 1679, Wichita, Kansas.

Wanted—Estimator Engineer. General construction. Degree helpful—not essential. Accuracy a must. No clock watcher. Paid vacation. Salary—$5,500.00 - $7,500.00 a year. Central—South. Send Resume. P-9988, Engineering News-Record.

Sanitary And Civil Engineers with several years experience in the field of water and sewage works and industrial wastes. Excellent opportunity with growing firm. Salary commensurate with ability. Paid vacations, holidays, hospitalization. Address reply with resume to: O'Brien & Gere, Consulting Engineers, 100 East Genesee Street, Syracuse 2, New York.

Resident Engineer—thoroughly experienced —for inspection and supervision of construction of large sewage treatment plant and intercepting sewers. Location New York State. Salary open. Address reply with resume to: O'Brien & Gere Consulting Engineers, 100 East Genesee Street, Syracuse 2, New York.

CHIEF ESTIMATOR

Position open in contracting company for top man to estimate heavy construction jobs including earth moving, rock excavations, drainage, paving and concrete construction generally in New York area. Please send resume of experience.

P-9980, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

• POSITIONS VACANT

Sales Engineers. 2 men for permanent positions in fast-growing phase of heavy construction. Familiar with excavation methods and equipment. Civil engineering background desirable but not necessary. Must be willing to travel in Southeastern U. S. Excellent future. P-9899, Engineering News-Record.

Executive salesman to head selling division of Architect-Engineer-Construction firm in Southwest. Reply to P-9904, Engineering News-Record.

Construction Estimator-Analyst And Appraiser to manage professional surveying office in Chicago. Full knowledge of this business essential. Under age 35. P-9884, Engineering News-Record.

Streets Superintendent—requires 5 years experience in all-round street maintenance and cleaning operations; two years supervisory; age 30 through 50; written and oral exams given. Salary range: 492 to 600 with starting salary open. Write the Personnel Office, City Hall, City of Cedar Rapids, Iowa.

City Engineer, City of Sioux City, Iowa. Population 90,000, to head engineering department of 30 persons; report directly to City Manager. Broad civil engineering and administrative experience. Registered in some states. Minimum age 35. Beginning salary range $730-$830, depending on the qualifications. Apply City Manager, Sioux City.

Wanted: Superintendent experienced in mechanical and structural work for Ohio construction company building sewage and water treatment plants, etc. Send detailed resume of education, experience, age, date of availability, references and salary requirements to P-9978, Engineering News-Record.

Wanted—Soils Engineers. B. S. and two years experience or M.S.C. with or without experience. Registration desired but not necessary. P-9972, Engineering News-Record.

City Engineer—registered engineer with qualifying experience in supervision of sewage treatment plant, storm & sanitary sewers, street and sidewalk design and building code. Salary open as to qualifications. City Clerk, City Hall, Algona, Iowa.

City Planning wanted by the City of St. Joseph, Missouri, population approximately 87,000. Young graduate civil engineer with City Planning experience or recent engineering graduate with City Planning Major. Give complete resume and salary expected in first letter. Write to Mayor Arthur J. Meers, City Hall, St. Joseph, Missouri.

(Continued on page 239)

STRUCTURAL ENGINEERS

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Qualifications:

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Applications Accepted Until
March 6, 1959

Write

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DEPARTMENT OF CIVIL SERVICE
STATE CAMPUS SITE,
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To Assume Responsibility for Complete Highway Projects
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PERMANENT OPENINGS FOR QUALIFIED MEN EXPERIENCED IN THE DESIGN OR SPECIFICATIONS FOR

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Engineering Manager

For Assignment in Alaska On DEW Line
Distant Early Warning System

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To Be Responsible for the Overall Operation, Maintenance, Performance and Administration of a Complex Radar and Communications System Covering a Large Geographical Area

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Your Background Should Stress Engineering Administration in Plant Maintenance with a Good General Knowledge of Electronics

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BS degree preferred with a minimum of 10 years supervisory experience

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With Mechanical Experience

General Contractor will add to expanding organization man qualified for large projects run independently of main office. Should be thoroughly experienced in both general contracting field supervision and complex mechanical work. Should have had some mechanical design experience, preferably with engineering degree to work closely with Company Engineers. Work principally in the supervision of subcontracts, coordination of work and liaison with Owners' representatives. Work in Western section of U. S. Give full resume in reply with salary requirements and photograph.

P-9918, Engineering News-Record
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Expanding construction firm interested in employing an estimator with experience and background in diversified estimating. Will qualify him to some day position as Assistant to Chief Estimator. Civil Engineer graduate preferred. The company provides many benefits for the right person.

ROSCOE-AJAX CONSTRUCTION CO., INC.
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• POSITIONS VACANT

(Continued from page 237)

Resident Engineer for DEW Line (Distant Early Warning System) to be concerned with the constructional aspects of all major repairs, major modifications and new construction on one or more DEW Line sites in the Arctic. Salary $1,350 per month. Qualified applicant should have BS degree in Civil, Architectural, or Structural Engineering with 10 or more years' experience and be in excellent physical condition to withstand the rigors of Arctic life. Also must be American, Canadian, or British subject. Person hired will be employed for approximately 8 months of the year. P-9923, Engineering News-Record.

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Construction Supt.—10 yrs. experience Concrete paving. Toll and state highways. PW-9875, Engineering News-Record.

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Heavy and Highway Construction Superintendent. Engineering, Estimating. Experience Available soon. PW-9933, Engineering News-Record.

Resident Engineer—Architect's Superintendent. Varied Industrial and some Commercial experience. Registered Civil Engineer. Desires permanent position in Mid-West area. Available in February. PW-9894, Engineering News-Record.

BSCE, Young, Single, $3\frac{1}{2}$ years Civil-Sanitary Experience desires position in sanitary work. Field or Office. PW-9893, Engineering News-Record.

Electrical Construction Superintendent, 46, 28 yrs. experience, 5 yrs. field engineer and design. Heavy, industrial, power house and substation. Complete job, material take-off, expediting, negotiations to final sale. PW-9806, Engineering News-Record.

Construction Supt. General Construction. PW-8896, Engineering News-Record.

Safety Director. 18 years experience in all types construction. Interested in permanent position. Free to relocate on reasonable notice. PW-9800, Engineering News-Record.

Construction Engineer Field Layout—Supervision city work industrial plant subdivision development, drafting ability—S.W. or S.E. area. P. O. Box 53-296 Miami, Fla.

Right of Way Eng'r. 20 yrs. State Hwy. Engr., Surveyor, Draftsmen. PW-9955, Engineering News-Record.

Civil Engineer, 25, BSCE, 3 yr. Diversified Experience, desires responsible position vicinity good college. Lt. Claude Pilley, 3743-C Prichard Pl., Ft. Knox, Ky. PW-9904, Engineering News-Record.

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Top Broad Gauge Construction Services:— Range: —General Superintendent: Projects Manager: —Available Early March 1959:— Extensive Heavy Bkgrd: Embraces A Variety of Multi-Million Dollar Projects:—Practical Experienced Managerial Cost-Wise Producer; —all Phases:—Heavy Structures:—Commercial:—Industrials:—Public-Works: —And Diverse Heavy Engineering Construction:— Result Getting Know-How:—Trouble-Shooter; —Currently Employed:—Desires Association with General Contractors:—or Joint-Venture Firms:—A-1-Refegences:—Prefer Mid-Atlantic Southeastern States:—Replies PW-9998, Engineering News-Record.

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FS-9813, Engineering News-Record
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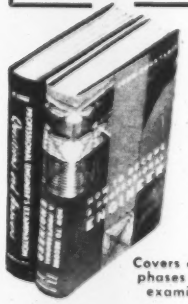

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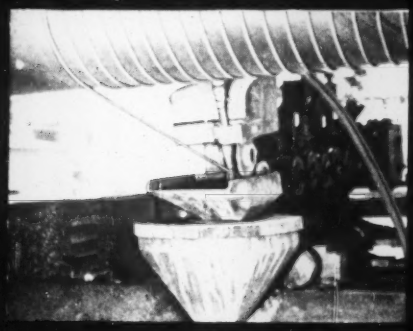

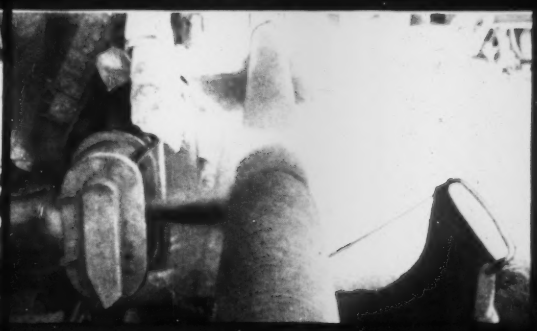

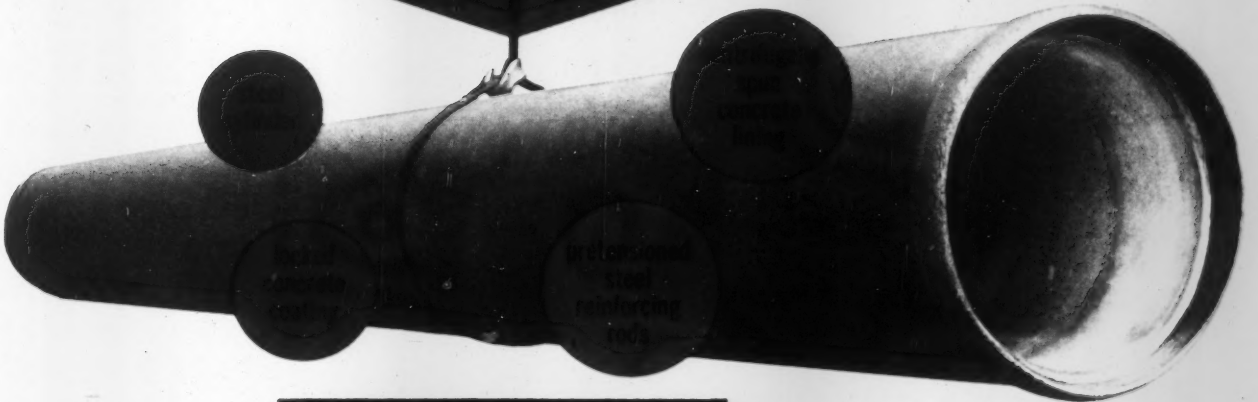

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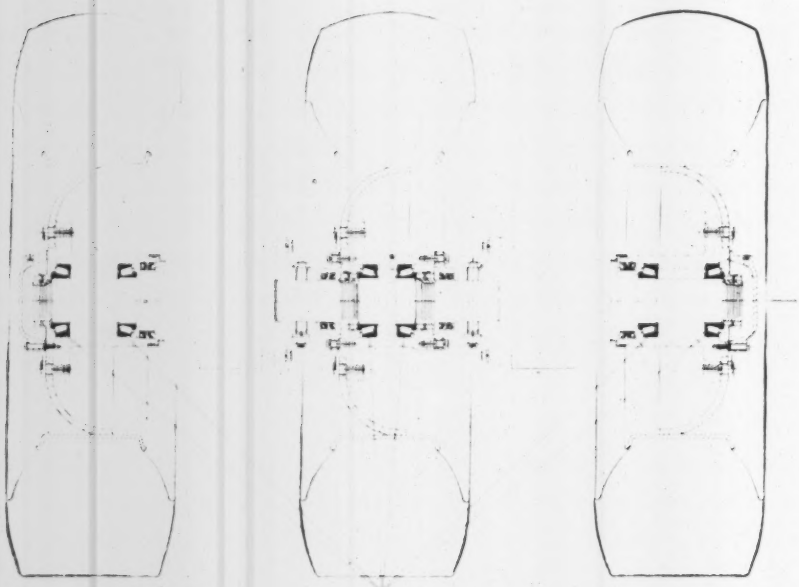

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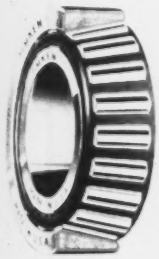

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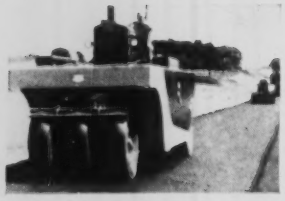

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